

POLSKA AKADEMIA UMIEJĘTNOŚCI
INSTYTUT EKONOMICZNY

STUDJA EKONOMICZNE

ECONOMIC STUDIES

II

KRAKÓW 1935

NAKŁADEM POLSKIEJ AKADEMII UMIEJĘTNOŚCI

SKŁAD GŁÓWNY W KSIĘGARNIACH GEBETHNERA I WOLFFA
WARSZAWA—KRAKÓW—ŁÓDŹ—POZNAŃ—WILNO—ZAKOPANE

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WYDAWNICTWO INSTYTUTU EKONOMICZNEGO
POLSKIEJ AKADEMJI UMIEJĘTNOŚCI

REDAKCJA (EDITORS): PROF. DR ADAM HEYDEL
DR WŁODZIMIERZ HAGEMEJER

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ADAM HEYDEL

ECONOMIC ACTIVITY AND INTEREST

Where do we find ourselves? In a series, of which we do not know the extremes, and believe that it has none. We wake, and find ourselves on a stair: there are stairs below us, which we seem to have ascended; there are stairs above us, many a one, which go upward and out of sight.

R. W. Emerson (Experience).

I

Among the many ingenious arguments used by Mr. Carlson in his paper¹ on "The notion of equilibrium in interest theory", he quoted an example of Jevons², which seems to me less convincing than the others. According to the example, "men on a vessel at sea will tend to distribute their supply of necessities at an equal rate over the time the voyage lasts". This picture does not correspond very exactly to economic reality.

The passengers on the vessel know definitely how long the voyage will last, their stock of necessities is fixed.

The frames of economic life seem to be more like the beautiful picture of Emerson, adopted as the "motto" of this paper. We do not know how long the voyage will last: indeed, "we believe that it has no extremes".

¹ Mr. Sune Carlson delivered an address on the Theory of Interest (printed in issue I of *Economic Studies*) in the Economic Institute in Cracow. A discussion followed. This paper and the following paper of Dr Hagemeyer are a development of the authors' remarks during the discussion.

² The same example is quoted by F. H. Knight, *Risk Uncertainty and Profit*, 1921, in the footnote p. 132.

But let us take it for granted that we know; or at least there is a certain probability of foreseeing when we are to reach land. To Jevon's men land means: possibilities of consumption depending on the effort for the affording of commodities and independent of their consumption on the vessel.

There are two different possibilities in this case: according to the term of the voyage and to the quantity of the supply of necessities:

1. The passengers are far away from land, and they are afraid of exhausting their resources before reaching it.

2. Land is near and resources are relatively plentiful.

In the first case men on a vessel will behave as Jevon's example describes them. We can find cases of similar behaviour in economic life. It corresponds to the storage of food supplies during war, in besieged towns, to hoarding and so on.

In the second case the men on the vessel would consume as much as possible of the food on the boat; they would, perhaps, consume more during the first days than during the following ones. This hypothesis may be reflected in economic life in the case when a great economic improvement in the near future may be foreseen. A man who is certain of getting a position with higher wages, or is about to receive an inheritance, may act in a similar way, if he is convinced that his future welfare does not depend, or depends very little, upon his present consumption.

Both these cases may arise, but they are not typical.

For typical cases our previous statement holds true: we do not know the term of our voyage. There is no land before us.

Furthermore the amount of our necessities is limited, but by no means fixed. By our efforts we are able to increase it, and we aim to do so.

In this last respect we are again in a position which scarcely could be compared with that of the passengers on Jevon's vessel. We find ourselves rather in the position of fishermen who may increase or decrease, while under way, the supply of fish (their nourishment) if they adopt these or other methods of economic activity.

If we wish, then, to concentrate on typical facts, we must deal with the following set of conditions:

1. Individuals presuppose the continuity of economic life.

2. Their future welfare depends upon their attitude in the present.

These conditions must be taken into consideration if we are to discuss the mutual relations between economic activity and interest.

II

Interest is a price paid for the services of capital. A price appears when there exists a demand for a good, and when the affording of the good is connected with costs, or when its quantity cannot be increased.

The price may consequently disappear if:

a) The demand for the good ceases, or

b) The good may be afforded (or its quantity increased) without costs.

The quantity of capital and of the services of capital can obviously be increased. The price of these services must then be derived from the costs of affording capital. This price would disappear, if the capital ceased to be a demanded good, or if it could be afforded without costs.

The increase of capital is a dynamic phenomenon and disturbs the equilibrium. Therefore if we wish to find out whether the rate of interest would, or would not, appear in a state of equilibrium, we must investigate a system in which the quantity of capital would remain constant.

This state of equilibrium needs special conditions if the equilibrium is to be stable. It cannot last in the presence of any economic activity whatever. Production of consumptive goods alone is not sufficient to maintain the equilibrium.

Consumption and natural forces tend to decrease the quantity of capital. Stable capital is gradually destroyed technically in the course of production. Circulating capital is consumed from one period of production to another.

These deficits must be replaced if the sum of the capital is to remain unchanged. There must appear savings within the limits of the quotas of amortization. Funds flowing from

these savings replace the stable capital *pro rata temporis*, and must also replace the whole of the circulating capital for each period of production.

What, if any, relation exists between amortization and interest? The demand for fresh capital would disappear if the capital did not promise any profits, — in other words, if it ceased to be an „everlasting income-yielding capacity“¹, since amortization would not prove to be useful. Thus the rate of interest would fall to zero.

Decapitalization would follow, at least in the limits of the quotas of amortization. It would pay to consume these rates instead of locating them in the form of investments.

I have used the words “at least” because decapitalization could go farther. There are always possibilities of increasing consumption at the cost of capital. A great number of productive goods may also be used for consumption. Men may live in factory buildings; coal may be used for the heating of apartments; corn, which is used in normal times for sowing and as food for animals, can be used in human consumption. The same may be said of animals raised for breeding purposes, or animals yielding long-lasting utilities, as, for instance, sheep giving wool, cows supplying milk, oxen used for dray purposes. Many of the means of transportation of commodities could also be adapted for the satisfying of immediate wants. Human labour, above all, may be easily transferred from the sphere of the production of capital goods to the production of consumption goods, or to the sphere of personal services.

It seems rather obvious that all these changes may be arrested, and the stability of the equilibrium preserved only when productive goods grant profits which are high enough to evoke savings in the amount of the amortization quotas².

Once profits are granted, the appearing of interest is conditioned by the exchange of capital services. This exchange is derived from the difference in economic situation and in the attitude of the two groups — the entrepreneurs and the savers.

¹ Comp. S. Carlson, op.c.

² Comp. Lionel Robbins, *On a certain ambiguity in the conception of stationary equilibrium* (Econ. Journal, June 1930), pp. 211—214.

This difference in economic situation and attitude may be of course safeguarded in a state of equilibrium.

The assumption of such a state of equilibrium is of course highly artificial. Its aim was to show that the rate of interest is a necessary condition for the amortization itself.

I do not intend to discuss its level. It is sufficient if the necessity of this element in a state of equilibrium is demonstrated. Our state of equilibrium may be characterized by the fact that a certain amount of capital has been already created. At the same time it does not show any tendencies to expansion. But let us take into consideration other logically possible states of equilibrium.

We can naturally imagine a state of economy without any rate of interest. This would be possible if no accumulated capital existed. The construction of the most primitive instruments, like the fisher's net or the hunter's bow, claims for amortization, provided that the system is not to pass into a state of backward dynamic movement, in other words, provided that it is to be kept on the afforded level.

I can see only one other possibility of a state of equilibrium without interest. That is, a state of absolutely static economy. I mean by this, a state in which all wants, and all efforts (costs) would be in equilibrium. This hypothesis however, is conditioned by an immobilization of the whole of economic life. Logically it would be possible for an infinitely short moment of time, provided that all these wants and costs have been balanced simultaneously.

This would bring with it the disappearance of interest, but also, as well, the disappearance of production and exchange and consequently of prices, wages and so on. Production itself in home-managements would disappear.

The periodical return of hunger, of the need of heating, and of other wants evokes production in the home, brings about the everyday shopping of the cooks at the food markets and the periodical purchases of coal. This brings with it production, transport and exchange. Prices and wages result.

These same changes together with the technical and natural changes in the goods evoke also interest.

Professor Robbins states that, according to Schumpeter,

interest "emerges when conditions are changing, and if change were to cease, it would disappear"¹. But how can we imagine any lasting economic system without any changes at all, at least changes of the type mentioned above?

At the same time I can not find any but a quantitative difference between my instances of the gradual destroying of capital by natural forces and the fact of the conflagration of a factory, which according to Schumpeter brings about an agio of the present purchasing power². If one admits this, it seems difficult to deny that amortization is sufficient to evoke interest.

III

The point which needs elucidation is: what are the costs of saving?

I take it for granted that men do not tend to diminish their capital, but to consume only the net income. This feature of their behaviour proves that their economic activity is calculated on infinity³. Otherwise, if any term could be fixed, they would consume a part of their capital, in this way increasing the sum of the satisfaction of their wants. It does not mean however that this behaviour does not cost them anything. Just the opposite.

We can meet, it is true, with acts which tend to give this infinite stability to wealth, but which are not connected with any sacrifices.

A man who creates in his will a fund or a primogeniture, tends obviously to immortalize the wealth he has collected. In many cases this is not connected with any sacrifices on his part. Then it does not seem reasonable to consider this as an economic activity. It influences economic life, but it might rather be ranged with measures of economic policy.

In cases of acts which can be considered as economic

¹ O. c., p. 213.

² *Theorie d. Wirtschaftlichen Entwicklung* (III Aufl. 1931), p. 240.

³ I have tried to defend another thesis in my paper *Zur Problematik d. Begriffes d. Produktivität* (Zeitschrift für Nationalökonomie, Wien 1929, p. 244).

activity, sacrifices exist and must be balanced by a reward in the future.

Abstinence from immediate consumption gives the possibility of increasing future consumption. This happens not only in the case of regular savings, but also in all cases of delayed consumption which are derived from storing of commodities, hoarding, and so on.

People behave in this manner if there is doubt about "reaching land". They cease to adopt this method when no doubt about the future exists. They pass then to consumption or (in the presence of interest) to saving. This proves that they lose something by doing so.

What do they lose?

The following conditions must be kept in mind if we want to eliminate all the accidental elements of this problem:

1. The scale of wants should be granted the same for both moments: for the moment of saving as well as for the moment when the accumulated capital might be used in consumption.

2. We should grant that the income at the moment of the beginning of saving and the income at the moment of the return of capital would be equal if no savings were undertaken. The only difference in these incomes should be ascribed to savings.

If these conditions are realized, the following consequences would ensue in an interest-less economy:

The savings being 10, at an income-level of 100, one would deprive oneself of the units 100, 99... 91. One receives instead in the future the units 101, 102... 110. In this way the abstraction of a certain part of the present income deprives one of goods of a higher utility than those which would be added to one's future income¹.

This loss is obvious from the point of view of one's present evaluation of commodities, even if the individual does not underestimate his future wants. We can not, however, explain in this way the connection between costs of saving and the lapse of time for which consumption is delayed.

¹ Dr Oskar Lange, privat-docent at the Jagiellonian University in Cracow has drawn my attention to this approach to the problem.

IV

It seems evident that preference for present goods is a very typical phenomenon. It might be true that this feature of human psychology cannot be treated on an equal footing with such formal and rather axiomatic statements as the economic principle, or the law of the decrease of utility.

But I am afraid that criticism has been pushed sometimes too far.

"The assumption of a general preference in human nature for present over future goods is so commonly and confidently made that some courage is required to call in question the foundations of the entire body of doctrine on the subject". Things have changed since F. H. Knight¹ wrote these words. The situation seems now to be rather the reverse — and prof. Knight has contributed to this change. It requires some courage, indeed, at present, to defend the old Böhm-Bawerkian thesis. Yet it should be done. I am convinced that that thesis contains valuable elements and perhaps they could be harmonized with some more modern points of view.

What is the way of approach? One of the difficulties of the problem lies in the fact of the existence of interest.

"The fact of the existence of interest in society is wrongly taken as proving that men discount the future. The relation between interest and time preference is, in fact, inverted in this view. In a free market where interest can be obtained it is natural that men should esteem a present dollar equally with its amount at the current interest rate at a future date, since one can be freely exchanged for the other"².

I am afraid that no proof could be found for either of these two opposing statements. The problem is of the same logical character as for instance the question whether the rising of the column of mercury in the thermometer results from the adding of coal to the fire, or whether the increase of coal was caused by the rising of the column of mercury in the thermometer³.

¹ *Risk Uncertainty and Profit*, p. 131.

² F. H. Knight, l. cit.

³ I assume an experiment in which other factors (like warming the thermometer in the sun or rubbing it with the hand) are eliminated.

One might ask also whether the running of the motor car causes the speedometer to register the number of miles, or whether the causal relation is reversed.

In all relations of a similar character, that is, if a functional correlation exists between two simultaneous facts, there is no possibility of demonstrating which of the two phenomena causes the other, if we do not shift the point of view of our analysis.

The right way to solve the difficulty seems to be the following: we should ask whether we can observe the phenomena *A* and *B* apart from each other. If *A* can appear without *B*, but *B* cannot appear without *A*, then obviously *B* is not the cause but most likely the result of *A*. If we can observe the warming of the stove (*A*) without the rising of the column of mercury (*B*) (in the absence of the thermometer) but we never observe the rise of mercury in the given conditions, without the heating of the stove, or if we can drive a car (*A*) without any changes in the speedometer (*B*), but we never meet with changes in the speedometer without running the car, then the hypothesis of the causal relation running from *A* to *B* proves to be highly probable¹.

In the case of preference for present goods and of the rate of interest the main thing would be to state: (1) whether there occur facts of preference of present goods without interest, and (2) whether interest would exist without preference of present goods.

It is not difficult to discover instances illustrating (1). It is indeed rather obvious from the point of view of common sense, that if one proposes a smoker the choice between a cigarette to be given to him immediately or the promise of a cigarette to be given to him tomorrow, he will choose the present cigarette, granted that he feels the lack of this commodity.

¹ I do not want to discuss the whole of the very intricate problem of causality, or of the functional relation. I only wish to speak in terms of common sense in the same meaning in which Bertrand Russell says (*Mysticism and Logic*, French translation, 1922, p. 136) that *A* may be considered as the cause of *B*, even if there exist cases where *B* does not follow *A*. Striking a match will be the cause of its lighting, in spite of the fact that some matches are wet and will not burn.

The same may be said of the satisfaction of hunger, the possibility of sleep, the need of heat, and so on.

All these examples deal with cases, in which we do not, in practice, meet with any possibility of savings, and consequently of obtaining surplus in the form of interest.

If this holds true, then it seems difficult to deny the same character to other wants. I do not see where one could draw a line dividing wants into two categories: the one bound with the depreciation of future goods, and the other deprived of this character.

It is true that depreciation of future wants and commodities might well be less distinct in some groups of wants ¹.

There remains the problem of the relation between preference for present goods and the quantity of these goods.

The witty anecdote about the tramp who, finding a hundred dollar bill, ordered a hundred dollars worth of ham and eggs, which was quoted by Dr. Knight to show the paradox of time-preference, can be, as far as I see, harmonized with this thesis. We can compare the decrease of the utilities of present units of goods with their disagio in the future. The point of intersection of the two curves would show us the quantity of the present goods which are preferred to future ones. It is obvious that everyone prefers to dine all through the week rather than to receive seven meals in one day. The units 3... 7 meals a day would not present any more satisfaction. It is even probable that men would be ready to pay for the permission not to eat them. Moreover Prof. Knight is right when he says that men (do not) "wish to compress all the satisfactions of a life time into the present moment and fast for ever after". We must take it for granted that people have some plan of consumption for the future. But how far does this plan reach? That depends upon one's imagination of future wants and incomes, and all

¹ This would present a problem analogous to the question of the elasticity of demand. The classification of goods according to the degree of disagio of the values in the future would probably agree in general with the classification of goods with more and less elastic demand curves.

we can say is that both appear less distinctly in future than in present time¹.

2. Would interest exist without the discount of future commodities?

If men did not give any preference to present goods, saving in the presence of interest would be so advantageous that the rate of interest would tend to fall to zero. As a matter of fact we meet with: 1) a rate of interest always, 2) long periods in which this rate does not change.

The fact of the perpetual existence of interest would be quite an exception among other economic facts, if interest were a surplus which is not connected with any costs.

In everyday experience we meet with prices which do not cover more than the costs of production. Moreover, daily we meet with prices which are lower than the costs of the production of the commodity. It is true that upward shifts of demand curves for capital can prevent the fall of the rate of interest to zero. But as long as it has not been proved that these shifts have always, and without any exception, balanced

¹ Figure 1 shows the choice between present and future goods depending on the quantity of goods. The axis OY shows utilities of units of a good; OX quantities of the same good; OT — time. The units I

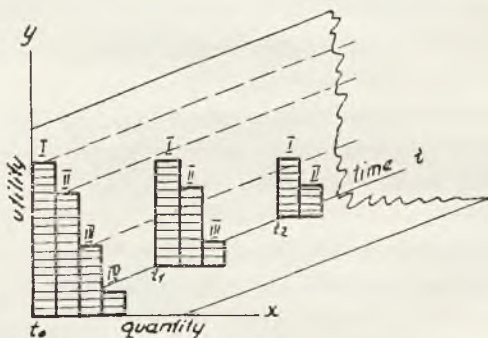


Fig. 1.

and II in time O have a higher degree of utility than the unit I in time 1 but this last unit, has a higher degree of utility than unit III in time O . The same can be seen for the units I, time 2 in comparison to unit III time 1.

the increase of savings, this factor should not be considered as being sufficient ground for the existence of interest.

Proof seems, alas, very difficult. In such conditions it would rather be reasonable to admit that we cannot state the possibility of the permanent existence of interest without the discount of future wants.

V

There arises the following difficulty if we wish to compare the costs of saving (disagio) with the reward (interest). Men, when saving, do not exchange, as a rule, present goods for the consumption of future goods, as Böhm-Bawerk was inclined to think. This point is very justly emphasized by Mr. S. Carlson.

"An increase of future consumption-income is obtained by exchange of present consumption-income for income-yielding capacity¹ in the future"².

The same idea has been expressed by K. Wicksell in the following words:

(it is) "die Eigentümlichkeit Böhm-Bawerks, den Genuss der Früchte einer Ersparniss stets in einen einzigen Zeitpunkt der Zukunft zu verlegen, während doch in allgemeinem unsere Ersparnisse, gross oder klein, geeignet sind, unsere ganze Zukunft zu bereichen"³.

F. H. Knight throws a still more glaring light on the same problem:

"It is fundamental to the actual phenomenon of capital accumulation that the principal, once saved, never is consumed. If it is consumed later, there is no net addition to the capital supply of society. Men save in large measure with no thought of ever consuming the capital, or even the income which it yields"⁴.

In this light the problem consists no longer in an exchange of the consumption of today for the consumption of tomorrow, or the consumption of this month for the consumption of the

¹ Capital. ² L. cit., p. 2.

³ *Zur Zinstheorie* (Die Wirtschaftstheorie der Gegenwart III Bd. Wien 1928) p. 202.

⁴ *Risk Uncertainty and Profit*, p. 133 (footnote).

next, but is the exchange of the consumption of today for the stream of fractions of this magnitude lasting for eternity.

If we save \$ 200 of one month's consumption, we shall be able to consume (at a rate of 6 %— yearly) \$ 1 a month more, but this stream will last infinitely.

How can we find a relation between these two different magnitudes (200 and $1 \times \infty$)?

We know of course that at the rate of 6 %— a year, the interest (without compound interest) will repay us the invested capital in about $16\frac{2}{3}$ year's time, but this does not throw any light on the problem.

The right way of analyzing this point seems to me the following: one can get after one year 212 instead of the 200 which was saved. One may dispose of this sum in different ways, consume it, or save the whole, or part of it. Marginal utilities of these different possible uses of the sum will determine his decision in a year. But the main problem which remains is this: what is the sum which, if received in a year, would balance his sacrifice of 200 today? Did he lose or gain, by saving 200, if he decides to consume the sum saved and to return to the former level of his income?

This method of reasoning may seem artificial, but it is not difficult to find corresponding facts in reality. A man who foresees an increase of expenditures in connection with changes in his position or in his family circumstances can easily undertake such an evaluation in the case when these changes do not occur, or for the alternative that they might not occur.

VI

The fact of the generality of the discount of future wants should, of course, be investigated. F. H. Knight proposes a more realistic approach. He says that there are probably men (a) who discount the value of future goods, (b) for whom the value of present and future goods is equal, and (c) men who have a rate of preference for future goods.

I am inclined to agree with this thesis. It is obvious at least, that the grade of depreciation is subjectively very different. A combination of great prudence with objective conditions (like personal wealth) can easily give cases in which

the preference for present goods is a „quantité négligeable“. We can also find cases proving the *disagio* of present goods. We read, for instance, from time to time, of beggars who, while living in misery, have hoarded great wealth. Another point should not be omitted in this context. And that is the quantity of goods, or the part of the income which is supposed to be saved. It is true that a small fraction of income may often be saved without any reward. On the other hand, it seems certain that the saving of a large part of income would normally claim for a surplus. The cases of the hoarding beggars are obviously exceptional.

All these various cases may be easily compared with another group of economic phenomena, namely with labour. There are many men who would be willing to work without any reward; there are individuals who would be ready to work even if they had to pay for the privilege. A great number of scientists and artists belong to these two classes. I suppose that labour gives a certain satisfaction also to day-labourers. The question: how much labour would these individuals supply without reward arises here as well as in saving.

Economists, however, are right when they treat labour as a disutility in their scheme of first approach to economic reality ¹.

¹ Figure 2 could be used to demonstrate the supply of savings, as well as the supply of labour. The curve SS' is the curve of costs

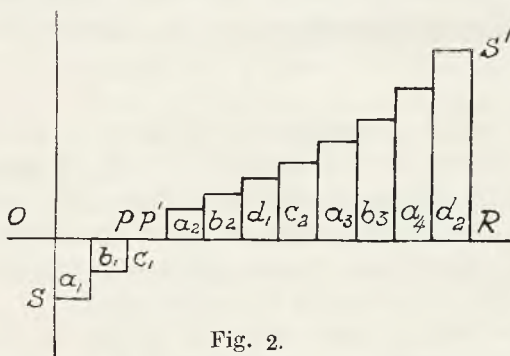


Fig. 2.

(of labour and saving). The segment OP corresponds to labour a_1 and b_1 which could be supplied even if the men A and B , were compelled

And this analogy seems to be important. Instead of speaking of rewards paid in the course of production to the original means of production, we should rather emphasize the fact that there are two elements of personal costs, or personal disutilities: labour and saving. These two components (the only components which exist) must get a reward in economic life.

In spite of all that could be said concerning the differences of their psychological bases, and of the role they play in economy, they have obviously common elements.

Both are based on abstinence from the satisfaction of immediate wants — leisure or consumption. Both must find a reward: the one in wages, the other in interest.

*

Some German economist maintained that Böhm-Bawerk invented his theory of preference of present goods, because he observed the light-mindedness of the inhabitants of Vienna. At this Ludwig Mises remarked: "What a pity that the author is not aware of the fact that Böhm-Bawerk was moreover the son of an army officer, his thesis would find a still stronger support"!

I do not want to follow the example of the German critic of Böhm-Bawerk, and to say that prudence and good economic conditions of some nations influence the theories of their scientists. But it might be worth while to remember how very difficult it is to save in other countries, and how obvious the sacrifice bound with this economic activity seems in their conditions.

to pay for "the right of labour", and to savings, made even at a negative rate of interest. The segment PP' corresponds to the amount of savings at an interest rate equal to zero. $P'R$ corresponds to further units of labour or savings of A, B, C , and to the units d_1 and d_2 of labour or savings of D , supplied only for reward (wages, or interest equal to RS'). The marginal units of labour or savings (supplied by any of the subjects $A...D$) together with the marginal units of labour and savings demanded, determine the equilibrium rate of interest. The fact of the existence of OP' of savings at a rate of interest equal to zero does not prove that a state of equilibrium could be kept without any interest, as there is no reason why the amount of savings OP' should cover the quotas of amortization. Empirically it seems rather, that the segment OP' represents but a small fraction of the whole of savings (OR).

Streszczenie

Adam Heydel: Działalność ekonomiczna i procent

Autor rozpatruje działalność gospodarczą na tle przykładu Jevonsa, cytowanego przez S. Carlsona w artykule: *O pojęciu równowagi w teorii zysku* (Studja Ekonomiczne I, 1935). Według tego przykładu ludzie rozkładają równomiernie w czasie swoją konsumpcję, podobnie jak podróżni na statku, skąd miałyby wynikać, że ocena dóbr obecnych i przyszłych jest równa. Autor wykazuje, że przykład podróżnych na statku (cytowany również przez F. H. Knighta) nie odpowiada rzeczywistości gospodarczej. 1) Ludzie gospodarujący, w przeciwieństwie do podróżnych na statku nie znają terminu podróży, i uważają życie gospodarcze za ciągłe; 2) zasób ich dóbr nie jest ustalony, ale zależny od ich gospodarczych wysiłków; 3) zaspakajanie potrzeb przez podróżnych statku po wylądowaniu nie zależy od rozmiarów ich konsumpcji w czasie podróży, w życiu gospodarczem zaś przyszłość zależy ściśle od teraźniejszości. Autor uznaje możliwość działania w życiu gospodarczem, podobnego do zachowania się podróżnych na statku, za zjawisko wyjątkowe. Można by raczej porównać typową działalność gospodarczą z zachowaniem się rybaków na łodzi, o ile nie znają kresu swojej podróży, a mogą zaspakajać swoje potrzeby, łowiąc ryby. Autor uważa procent za cenę płaconą za usługi kapitału. Cena może się pojawić tylko, o ile produkcja dobra związana jest z kosztami, lub o ile niemożliwe jest powiększanie ilości dobra. Powiększenie ilości kapitału jest zawsze możliwe, stąd cena jego musi wynikać z kosztów, związanych z jego produkcją.

Aby wyjaśnić fakt tej ceny (procentu), należy rozpatrzyć system, będący w równowadze, t. j. układ, w którym ilość kapitału się nie zmienia.

Taki układ możliwy jest tylko, jeżeli amortyzacja wyrównuje ubytek kapitału, spowodowany przez siły przyrody i przez konsumpcję kapitału obrotowego w trakcie produkcji.

Gdyby kapitał nie dawał żadnych zysków pierwotnych, ludzie, zdaniem autora, nie widzieliby interesu w odkładaniu rat amortyzacyjnych, ale zwiększaliby konsumpcję kosztem istniejącego kapitału. Kapitał zmniejszałby się, przynajmniej

w granicach stopy amortyzacji, ale to zmniejszenie mogłoby iść dalej, bo wiele dóbr produkcyjnych może być użytych do bezpośredniej konsumpcji. Procent musiałby się pojawić, by opłacić oszczędności, które wystarczą dla amortyzacji kapitału rzeczowego.

Można sobie wyobrazić tylko dwa stany gospodarki, w których procent nie występuje; 1) gospodarkę bezkapitałową, 2) stan absolutnej statyki, w którym następuje równoczesne wyrównanie wszystkich krańcowych użyteczności i krańcowych kosztów. Taki stan, logicznie możliwy na bardzo krótki okres czasu, byłby równoznaczny z zanikiem wszelkiej gospodarki, a więc nie tylko procentu, ale również produkcji, wymiany i cen.

Autor przyjmuje, że ludzie gospodarują na nieskończoność, t. j. dążą do pomieszczenia konsumpcji w dochodzie, a nie naruszania majątku. Niemniej utrzymanie nienaruszonego majątku wymaga ofiar. Ludzie przechowują zapasy dóbr bez procentu tylko w wypadkach niepewnej przyszłości. W innych wolą je konsumować, lub (przy istnieniu procentu) kapitalizują. Wynika stąd, że tracą na bezprocentowym przechowywaniu dóbr. Należy ustalić na czem polega ta strata. Przyjawszy, że dochód w okresie zbierania zapasów i w okresie, gdy zapasy mogą być skonsumowane, byłby równy, gdyby człowiek nie zaczął zbierać zapasów, stwierdzamy, że oszczędność 10 z dochodu 100, pozbawia nas jednostek dochodu 100—91, a daje przyrost dochodu w następnym okresie w sumie jednostek 101—110. Użyteczność krańcowa tych jednostek jest mniejsza, aniżeli jednostek 91—100. Stąd strata, nawet jeżeli człowiek ocenia równo dobra obecne i przyszłe. Wielkość tej straty jest jednak niezależna od długości czasu, na który odłożono konsumpcję.

Typowem zjawiskiem jest jednak wyższa ocena dóbr obecnych. Można to stwierdzić na dobrach czy usługach, przy których możność kapitalizacji, oraz osiągnięcie zysku (wzgl. procentu) nie występuje. Nie wydaje się, by można było przeprowadzić granicę, dzielącą dobra na dwie klasy: takie, które wykazują disagio wartości przyszłej, oraz takie, które jej nie wykazują. Autor przyjmuje z pewnem ograniczeniem tezę F. H. Knighta, że człowiek nie przekłada konsumpcji całego dochodu w chwili obecnej, nad rozłożenie tej konsumpcji w czasie. Sądzi

natomiast, że można ustalić, jaką ilość dóbr woli człowiek konsumować natychmiast a od jakiej ilości począwszy, znajdzie większą korzyść w rozłożeniu konsumcji na pewien okres. Ten okres jednak nie sięga w nieskończoność. Trudność w zestawianiu kosztów kapitalizacji i wynagrodzenia w postaci procentu stanowi to, że wbrew opinii Böhm-Bawerka ludzie nie porównują odłożonej konsumcji z użytecznością konsumcyjną zebranego kapitału, ale odłożoną konsumcję z wiecznotrwałym prądem zysków, osiąganych z kapitału. Autor wskazuje jednak na to, że trudność tę można ominąć, jeżeli się zwróci uwagę, że z chwilą uzyskania dochodu jednostka ma znowu możliwość wyboru pomiędzy utrzymaniem nienaruszonego kapitału a skonsumowaniem go, i że ten wybór może być podstawą kalkulacji w chwili podjęcia oszczędności.

Subiektywnie stopień deprecjacji dóbr przyszłych bywa rozmaity. Bogactwo, połączone z dużą przezornością, może sprawić, że stopień deprecjacji dóbr przyszłych będzie bardzo niewielki. Zależy to także od części dochodu, która ma być odkładana na przyszłość. Bywają nawet wyjątkowe wypadki deprecjacji dóbr obecnych.

Mimoto ekonomiści słusznie traktują odkładanie konsumcji na przyszłość jako *disutility*, podobnie jak traktują również pracę, mimo, że znajdują się jednostki gotowe pracować za darmo, lub nawet płacić za możliwość pracy.

Autor ilustruje to wykresem, który może być używany do przedstawienia zarówno podaży pracy jak oszczędności (str. 14).

WŁODZIMIERZ HAGEMEJER

SOME ASPECTS OF THE THEORIES OF INTEREST¹.
(WALRAS, BÖHM-BAWERK, SCHUMPETER)

The theory of interest is today the most doubtful part of economic science. The Böhm-Bawerk theory, based on the hypothesis of the difference of evaluation in time and on the greater technical productivity of roundabout ways of production is today attacked in its very foundations. Usually against it the theory of Schumpeter is advanced, which deduces the phenomenon of interest from the variability of the technical conditions of production. Interest, according to Schumpeter would therefore last as long as technical progress existed. The problem whether there would exist an interest rate in a stationary society is solved by Schumpeter negatively.

The aim of the following remarks is to direct the attention to the possibility of a somewhat different approach to this phenomenon. The object of economic-theory investigations must always remain the state of equilibrium, for only in that state does economical life show certain regularities capable of economical theoretic analysis. Changes in economic conditions may, of course, also show certain regularities in their course, however, these will be regularities of an extra-economic type. The economist may, on the basis of his knowledge of these "laws" of development (trends of growth of popu-

¹ The article of S. Carlson in the previous issue of the »Studies« formed an immediate incentive to the author of the present article. The conclusions reached in the reasoning of S. Carlson are in complete agreement with the views of the author. Only the point of departure is different and the basic conception, that is, the state of equilibrium.

lation, technical changes and the like) foresee certain transformations in market quantities; he may not, however, automatically fix such laws, while remaining within the limits of economical theory.

Limiting the subject of theoretical investigations to the state of equilibrium, I should like to stress the fact that in this term I include any temporary state of the market where there take place exchanges of goods or services between economical subjects. The market equilibrium results here from the aiming of individuals towards equilibrium in the field of the economy of each subject and also from the fact of the possibility of exchange.

A state of equilibrium defined in this way, does not obviously fall under the conception of stationary equilibrium, defined by Pareto as follows: „On peut dire que l'équilibre économique est l'état qui se maintiendrait indéfiniment s'il n'y avait aucun changement dans les conditions dans lesquelles on l'observe“¹.

It is only a certain point in the process of attaining a state of stationary equilibrium. The existence of a temporary equilibrium of the aims of economic subjects, as well as of the obstacles in the path of the realization of these aims, results directly from the existence of a market. Depending on the character of the market, this equilibrium may be different. We may complicate the theory by the acceptance of a varying degree of knowledge of the market, also by the introduction of various types of anticipation and the like. A basic statement of equilibrium of a certain defined type on every market and in every price which is fixed even for a moment, will remain unchanged. Obviously it is possible to say that the price which tends in successive intervals of time to its position within the limits of stationary equilibrium, passes through successive positions of temporary equilibria.

But if the changes in prices do not show such a convergency we have to do with the lack of the equilibrium of the system.

Within the limits of these remarks we shall take into account

¹ V. Pareto, *Manuel d'économie politique*, p. 153.

such a market as the Lauanne theory accepted. The prices on such a market have their positions of temporary equilibrium, and the direction of changes is set towards the positions of constant equilibrium. The problem above stated, therefore ceases to exist, but I do not intend, because of that, to negate the value of the investigation of the convergency of changes in a certain point of stationary equilibrium. I consider, however, the traditional formulation of a perfect market and a perfect competition as an indispensable first approach.

In this manner defining the state of equilibrium, we occupy the position of the formulation of Walras¹ which is today somewhat left out of consideration, as many of the achievements of that scholar. Obviously in such a state the prices of all goods and services are determined by the conjunction of the conditions of equilibrium; we shall consider those of them which are of interest to our problem, i. e. those which create the interest rate. The interest rate is the relation of the net income from a certain capital good to the price of that good. Net income arises as a result of the sale of the productive services of a given capital good and by the subtraction of the sums which it is necessary to lay out to keep in an unchanged state a given capital good.

Taking pa , $pb...$ as the price of productive services for capital goods in a unit of time; πa , $\pi b...$ as the cost of amortisation of these goods in the same unit of time, and Pa , $Pb...$ as the price of the same goods, we obtain for the interest rate or the rate of gain:

$$i = \frac{Pa - \pi a}{Pa} = \frac{Pb - \pi b}{Pb} = \dots^2$$

Obviously the profitability of all capital goods must be equal, so that the relation is identical for all kinds of goods. The value pa , $pb...$ depends upon the amount of productive services offered on the market, that is, upon the quantity of given ca-

¹ Walras defines this state as a state static but progressive „L'état économique reste statique quoiqu'il devienne progressif en vertu de cette circonstance que les capitaux neufs ne fonctionnent que dans une période subseuente a celle considérée“. *Elements*, p. 260.

² Z. Walras o. c. p. 247 see also W. Zawadzki, cit. infra p. 209.

pital goods, and also upon the demand for them, that is, the amount designated by the equations of the system of equilibrium for each productive service offered on the market. The amounts $\pi a, \pi b \dots$ are determined by the set of technical conditions (durability of goods) together with the prices of materials and services necessary for the renewing of a given good or the replacement of it by a new one. It is the same with the prices of capital good $Pa, Pb \dots$ which in competition must equal the average costs of the production of these goods — equal furthermore in equilibrium to the marginal costs. (That is, if the sum obtained from the sale of a product is to equal the sum laid out for the purchase of factors of production in every enterprise).

If in a given society there are savings, then in the next period of production, the quantities of capital goods are increased by the sum saved and laid out for the purchase and production of new capital goods, so that the sum saved,

$$\Delta C = P_a \Delta A + P_b \Delta B + \dots$$

ΔA here designates the growth of the quantity of capital goods A in the same way ΔB . If we only have ΔC determined, that is, the growth of new savings, then the whole system is sufficiently determined.

Therefore if the equation exists:

$$\Delta C = F(p_x, p_y \dots i)$$

and if that equation concerns the growth of savings in a defined interval of time, then the system of equilibrium changes from period to period "under the influence of the activity of its own elements" as Zawadzki says¹.

The function of the market supply of savings is the sum of the individual supplies expressed as demand for a good consisting of perpetual net income. The price of that good expressed in the numéraire amounts to $p_e = \frac{1}{i}$ for such is the value of the capital giving a perpetual income in the amount of unit of the numéraire. The demand for a perpetual income (capi-

¹ W. Zawadzki, *Les Mathématiques appliquées à l'économie politique* (Polish edition), p. 215.

tal) is determined for each individual by the function of marginal utility (rareté) $r = p_i(q)$. The general equilibrium of the individual requires the fulfilment of the equations:

$$\varphi_a = \frac{1}{p_b} \varphi_b(q) = \frac{1}{p_c} \varphi_c(q) = \dots = \frac{1}{p_e} \varphi_e(q)$$

determining the proportion of the marginal degrees of utility to the prices. Correspondingly altered equations of the balances of particular individuals as well as general equations of the balances of goods and services, give sufficient conditions for the determination of the general equilibrium for a given moment. The appearance of new capital goods on the market shifts of course, all the elements of the system in a definite direction.

If the function of the demand of new capitals becomes a zero only for $i=0$ then it is clear that the state of stationary equilibrium, no longer containing a source for further changes such as is capitalization, may be attained, since the interest rate will disappear. In the case where for $i \neq 0$, $\Delta c = 0$, the interest rate exists also in a state of stationary equilibrium.

All the equations given are fulfilled only when we examine economic processes which last for a longer time. Therefore long period equilibria in the terminology of Marshall correspond to them. For short periods the rate of interest for particular objective capital goods may be different, since the process of equalization takes place as a result of the locating of amortization quotas and in a noticeable durability of objective capital this must take place quite slowly.

The system of equations of the supply of savings which Walras gives would permit one rather to expect the first solution, that is, the gradual disappearance of the interest rate as the stationary equilibrium is approached; and in fact, Walras comes to these conclusions, in the *Elements*, stating that in a „société progressive“ the interest rate diminishes.

Walras however is not interested in the last point of this process of development and the state of stationary equilibrium is not with him the real object of his studies.

The theory of the interest rate offered by Walras seems a sufficient solution to that problem. The theory of production with the use of capital, as well as the theory of the rise of new savings are here strictly bound with the general equilibrium of the economic system and are at the same time an exhaustive enumeration of the conditions determining the magnitude of the rate of interest, which seems to me scientifically more justified than the looking for the cause of that phenomenon.

If it is a question of the individual supply of savings, then the term introduced by Walras: "demand for perpetual income" reflects the fact of the comparison of present and future wants not with supply of a good (as would result from the construction of Böhm-Bawerk) but with income, that is, with a flow of goods in time¹. As I have mentioned, Walras never states distinctly his thesis of the uniform evaluation of goods in time, but it is possible to come to that conclusion indirectly.

The theory of Walras describes, however, as I have stated above only the processes completed in long periods of time; entirely outside of its reach remain the changes of interest rate arising in such short intervals of time that the rate of rentability of various capital goods cannot be equalized yet².

The difference between Böhm-Bawerk and Walras, according to me, depends upon their differing assumptions as to the motivations of human activity, and it is possible to judge which of these assumptions is right only by a direct observation of actual economic subjects, and that in such conditions as would permit one to separate the occurrence of this motive of activity (the satisfaction of future wants in the terminology of Böhm-Bawerk or the ascertaining of a future income for oneself in Walras) from existing economic relations. For we must remember that the existing interest rate influences the decisions of individuals concerning consumption and capitalization in such a way that we may not

¹ A very convincing comparison of the meaning of the terms used by Böhm-Bawerk and the terms used above may be found by the reader in the article of S. Carlson quoted here.

² In this connection see the article of J. R. Hicks, *L. Walras* in *Econometrica* Vol. II p. 338.

draw any conclusions from the activities of individuals at the existing level of interest as to what would be their behaviour if the interest rate were lower or did not exist at all.

It seems to me that the answer to the question as to what is the typical or oftenest appearing human plan for the satisfaction of present or future wants does not lie within the limits of theory because of the purely empirical character of such a thesis.

Economic theory should examine the regularity of human activities and the market phenomena resulting from it, taking into consideration all or the oftenest to be expected types of economic motivation and only an empirical confirmation of the eminent importance of one of them could justify limiting oneself to such a category.

In dependence upon the assumptions granted in this question we may come to various conclusions concerning the interest rate in a state of stationary equilibrium, the differences however disappear in a noticeable degree when we take for the object of our studies not the highly abstractive construction such as is the state of stationary equilibrium, but the somewhat more realistic state of temporary equilibrium in the sense described above.

Between Walras' theory and that of Böhm-Bawerk there exists however another difference not concerning the function of the supply of new savings but the function of demand for capital. In Böhm-Bawerk demand for capital springs (outside of the purely consumptive demand for present goods resulting from the accepted type of evaluation) from the technical productivity of longer (in a temporal sense) ways of production. Time in this way becomes a factor in production. A theory of the use of capital so formulated contains within itself an hypothesis whose truth it is impossible to prove, and which may be only pictured by examples from a very primitive system of economy as in Böhm-Bawerk.

Walras' theory goes without that assumption and as a whole is built on defined relations of prices, that is, on elements possible to observe and analyze theoretically.

Without stopping to consider whether the theory of Böhm-Bawerk is true — and it would be possible, it seems,

to find limits in which his „third ground“ could be maintained — we must stress the fact that always from the point of view of the theory of economy, that theory will be superior which will explain the phenomenon of interest by the shaping of prices whose changeableness we may examine on the basis of our knowledge of market laws. Naturally in formulating market regularities we must take into consideration existing technical dependencies and every theory of prices takes this point into consideration, in building a function of supply which will result from the production function. If we examine the prices of the factors of production, the technical element has an even greater influence since also the demand for them is conditioned by their technical characteristics. The theory of roundabout ways of production is likewise a statement of the technical characteristic of the factors of production. There exists, however, a difference between this and the theory of the prices of the factors of production which is the basis of Walras' solution. This difference is based again as in the case of evaluation the difference in assumptions as to the productive process. Böhm-Bawerk on the basis of his observation of certain productive processes frames an hypothesis concerning the productivity of a complete process of production beginning with the very earliest stadium in which only the original factors of production, human labour and natural forces take part. Walras' theory does not concern itself at all with the conception of a complete production process together with the conception of an average period of production which is based on it, and at once observes the complicated process of production in which besides the original factors of production, produced capital goods take part¹. The fewer assumptions in Walras result from a more perfect method; the

¹ The complete agreement of the theories of Böhm-Bawerk and Walras is stressed several times by K. Wicksell in his discussion of the work of Åkermann (vide *Real Capital and Interest* in the Lectures on Political Economy, esp. p. 236 and footnote). In the opinion of Wicksell, only the point of departure is different with both authors. Böhm-Bawerk examines the whole process of production and pays special attention to the interval of time between the application of the factor of production and the appearance of the product while Walras treats production as a continuous process and takes into consideration only the moment of the appearance of

mathematical formulation of dependencies permits Walras to examine the object more realistically, without artificial simplifications, which gives the possibility of verifying basic suppositions concerning the character of the production function as well as the results obtained.

The theory of Böhm-Bawerk implies the specific theory of the wage-fund which only in exceptional cases may be made to conform with the present economic doctrine.

The progress of the theory of the prices of the factors of production beginning with Walras proceeded in the direction of a constantly fuller consideration of interdependencies of a technical character and of the drawing of conclusions from them concerning market phenomena. (The theory of the variability of what he calls "coefficients de fabrication" developed by Pareto and broadened later into a general theory of substitution by J. R. Hicks and J. Robinson, the theory of the prices of limitational factors of production construed by Pareto and developed recently by Schneider).

It seems to me that progress in the theory of interest will depend to a great extent on the fact whether it will build its conclusions on the premises of the theory of production. In this respect Walras' theory has this great superiority over the theory of Böhm-Bawerk that within the general frame of the solution given by Walras it is possible to build the results of the theory of production, which obviously may change the final results but does not diminish in any way the value of the general construction¹.

We will pass now to a comparison of the solution given by Walras with the construction of Schumpeter. Among the "dynamic" theories of interest we have chosen here Schumpeter's as the most representative for that movement. The

the product and the conditions of production (in which, of course, are included quantities of capital goods existing on the market), in that same moment.

¹ Of the whole modern literature about interest the most „Walras-like“ is the article of F. H. Knight, *Capital, Time and the Interest Rate*, in *Economica*, 1934, no. 3. In a manner completely analogous to Walras, Knight treats savings as a demand for perpetual income, not as the postponement of consumption for the future. Knight introduces a curve of indifference between present consumption and a steady future income

comparison will be obviously sketchy and does not pretend to be an exhaustive discussion of all the details of the complicated theory of Schumpeter. I shall select from the theory of Schumpeter only those points which are necessary to the characterization of his method of solving the problem which interests us here of the relation of the theory of interest and equilibrium, and that in its most general outlines.

The fundamental thesis of Schumpeter's theory is the conditioning of interest from capital by economic progress defined by that author as the introduction of new more rentable combinations of the factors of production. Schumpeter defines capital as "a sum of money and other means of payments", laying particular stress on the introduction of the monetary element into the definition of capital. The agio of the present

which means the same as the function of the marginal utility (rareté) of net income in Walras $r = p_e(q)$. These similarities reach even further. Walras as well as Knight introduce capital as a separate factor of production without attempting to express it in terms of quantities of "original" or "primary" factors of production necessary for the production of capital goods, since as Knight argues: "labour", "capital instruments" and "land" are in the first place categories of no homogeneity within themselves... each is produced and continuously reproduced (when at all) by the cooperation of all including itself". Likewise the mathematical formulation given by Knight is completely in agreement with the formula of the interest rate of Walras and is in a certain degree an expansion of the construction of Walras. The basic equation (derived from formulas for compound interest)

Knight leads to the formula $i = \frac{R - Q}{S}$ where R is the perpetual income

from capital investment, Q expenditure for the keeping of capital in an unaltered state, and S the cost of investment. (The notation partly introduced by me in the place of the verbal formulation p. 267 footnote). This formula is identical with the formula of Walras given above, p. 21. In the case when the capital instalations require time for their creation, the rate of rentability is correspondingly lower.

Knight's equation describing this case has no parallel in Walras, and is concerned exclusively with the case of the indivisibility of capital goods. For only in the case of indivisibility do the expenditures for investments begin to be a source of income, and only when they reach a certain quantum, which, either because of the time of building technically defined or because of the tempo of the accumulation of savings, calls forth a loss in income for a certain time. In the perfect divisibility of capital goods the equations of Walras suffice.

purchasing power above the future one results from the possibility of a profitable location, and exists as long as the possibilities of rentable investments last. The rentability of investment, according to Schumpeter, results only from the differential rents of the producers, deriving from a simultaneous application of more and less productive combinations of the factors of production. The pressure of competition forces entrepreneurs to changes in their method of production and as a result of the process of adaptation, all enterprises create the same method, and, as a result, the profits arisen from the first pioneer application of the more productive combination of the factors of production disappear.

Parallel to the primary profits, according to Schumpeter, the interest rate must also fall as long as it does not reach its point of stationary equilibrium, that is, until it disappears entirely.

Factors creating primary profit and interest are, then, new more efficient combinations of the factors of production, in other words, technical and organization progress in production understood as a technical process, as well as in commercial organization and transport, or the finding of new markets. The disappearance of profit and the interest rate result from the popularization of a new productive combination achieved under competition pressure. The credit market creates through the mechanism of demand and supply a uniform interest rate in spite of the fact that there can be no uniformity of primary profits since the equalization of profit would result only from the equalization of the methods of production and that must cause a disappearance of profit.

The comparisons of the "dynamic" theory of Schumpeter with Walras is made difficult as a result of a completely different understanding of capital. For Schumpeter it is only the sum of purchasing power, without any parallel in the world of goods, whereas Walras understood capital, as we have seen, as durable goods whose services alone are consumed in the productive process. These differing definitions of ca-

¹ J. Schumpeter, *Theorie der wirtschaftlichen Entwicklung*, 3 edition.

pital render all comparisons of these theories difficult, since each is concerned with another field of phenomena. As a point of contact in this comparison let us take not the theory of capital but the conclusions from these theories drawn by Walras and Schumpeter concerning the interest rate. Both these theories are, in the understanding of their authors, to explain the existence, in the capitalistic system of economy, of the phenomenon of payment and the exacting of interest as a reward for the loan of a certain sum of money. We shall consider here obviously the phenomenon of interest on productive credits as the most typical for the capitalistic system of economy.

Both these theories aim to explain interest as a price for capital disposition and also as a category of income.

Schumpeter contrasts throughout his whole construction the stationary state in which the whole product must necessarily fall to the share of the original factors in production, i. e. to the services of land and to labour, with the state in which a part of the price of the product falls to the share of the entrepreneur, who out of the price of the product, pays pecuniary obligations undertaken before the beginning of the productive process, and gives up by title of interest a part of his earnings to the capitalist, i. e., to the possessor of the present purchasing power. The next productive process begins again with the indebtedness of the entrepreneur but if in the meantime the popularization of the new method of production has lessened the profits, his credit will be contracted at a lower interest rate than before. We therefore have here on the one hand a state of stationary equilibrium, on the other, a lack of equilibrium exploited by possessors of purchasing power and entrepreneurs for the acquiring of income.

Expressing this in the terminology used above, one may say that Schumpeter, in distinguishing exclusively only the final state of equilibrium and states of temporary equilibrium (short time equilibria) entirely passes over equilibrium in the long run, which is the basis of the solution of Walras, who had nothing to say concerning the state of final equilibrium, but only spoke of the direction of the changes of particular

elements in the successive foundations of equilibrium which one might, like Marshall, define as long run equilibria.

The distinguishing between these various types of equilibrium may be of some help in the confrontation of both constructions under consideration. We shall consider in this light the process, described by Schumpeter, of the creation and disappearance of profit and the interest rate under the influence of the arise and popularization of new productive combinations, and at the same time we shall limit

ourselves here to technical progress in the strict sense of the word, leaving aside the problem of improvements in commercial organization as well as the possibilities of discovering new markets for products. Progress in communication technique may obviously be treated analogically to progress in production technique *sensu stricto*. As a result of the introduction

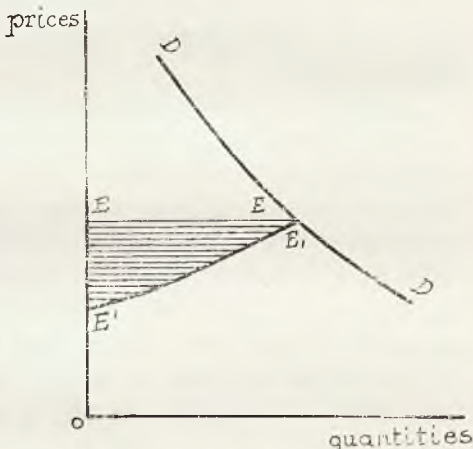


Fig. 1.

by some entrepreneurs of improved methods of production, there will be additional profits in the character of differential rents. Graphically this presents the shape of a particular expenses curve on the drawing shown above. DD' denotes here the curve of demand, EE the particular expenses curve before the introduction of improvements, $E'E'$ the same curve after the application of improvements by some entrepreneurs. We start with the state of equilibrium, the first particular expenses curve EE does not permit of those gains for the entrepreneurs, which later appear. The lined surface $EEEE'$ shows these.

Here we may ask whether, before the achievement of these technical changes the expenses of the entrepreneurs also include the interest on borrowed capital or the net earnings of the owners of the produced production goods. For

our problem this is rather a secondary question. We may here start with the state of stationary equilibrium and then, examining it on the basis of an identical evaluation in time, we arrive at the conclusion that the prices of productive services of capital include only the costs of amortization and insurance of capital, that is, that interest does not exist. Granting a defined rate of preferences we receive an interest rate determined by it. However, we may equally well select as a point of departure a long time equilibrium with the existence of interest from capital equalized for the whole system of social economy.

The introduction by some entrepreneurs of a new method of production forces others to imitation, and in this way differential rents disappear. The amount of capital cannot however increase if new savings do not appear, and the appearance of improved tools of production may only be achieved through a technical and economical transformation of already existing tools. By an economical transformation of an existing capital for a new one I mean here the location of amortization quotas in the building of capital goods of the new type.

What will be the results of a complete adjustment for our problem?

This question may be answered in different ways, depending on the type of technical progress concerned. We distinguish here, according to Pigou, three basic categories of technical innovations: 1) labour saving inventions, that is, improvements increasing the marginal productivity of capital more than the marginal productivity of labour; 2) capital saving inventions, increasing the marginal productivity of labour rather than of capital; and 3) neutral inventions, changing the marginal productivities of labour and capital in the same proportion. Beside these three categories we might name a fourth, that is, inventions not changing the conditions of the production of already produced goods but permitting of the production of new ones and the awakening of new wants in the consumers.

This category of inventions reacts however in its final results either as labour saving or as capital saving or as neutral.

The result of a complete adjustment will be different with each of the above named categories of investments. In the

case of a labour saving invention it will result in an increase of the price of a unit of capital-service and will be followed by an increase in the profit-rate¹.

Quite the opposite conclusions may result from an analogous examination of the results of a capital-saving invention. In this case the payment of the services of capital when their quantity is stable, may be lower after the application of the invention than before, although it is not necessarily the case.

¹ The diagram of the equal product curves presents here the situation of a typical firm realizing neither profit nor loss before and after the completion of technical innovations. The lack of profit and loss after the introduction of technical innovations forms a criterion of complete adjustment. On the axes we designate the quantity of labour and services of capital.

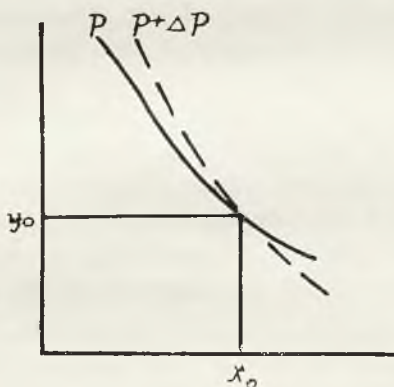


Fig. 2.

The quantities and X_0 Y_0 , labour and services of capital give after the introduction of a technical change $P + \Delta P$, in the place of the former product P . The relation of the prices of the factors of production must be in competition equal to the inverse of the marginal rate of the technical substitution $\frac{p_x}{p_y} = -\frac{\partial_y}{\partial_x}$ (increments are measured here along the equal product curves).

The technical change, if it is labour saving, changes the technical rate of substitution to the advantage of capital, so that the relation $-\frac{\partial_y}{\partial_x}$ increases. Let us designate the value of this relation before the change in technique by k , after complete adjustment k' , the inverse of the relation $\frac{1}{k} < \frac{1}{k'}$. Let us assume furthermore that the price of the product

The third type of technical progress, that is neutral inventions, according to the classification of Pigou, in principle raises the payment of a unit of the productive service of capital, provided that the quantities of both factors of production remain unchanged.

This will be true only for a particular firm in the department of production in which technical progress was achieved. These results would hold true for the whole society only if technical progress entered simultaneously the whole of production and were identical in character as well as in quantitative intensity. There would then be no reasons for the redistribution of capital among the particular departments of production. If, however, technical progress entered into only one branch of production with a stable technique in all others, then the results of our conclusions would remain true at least so far as concerns the direction of the changes of profit from capital.

We could draw, however, no quantitative conclusions, for the tendency to the equalizing of the profits of capital by transferring it from one branch of production to another would have to diminish the magnitude of the changes.

The whole method of reasoning up till now was based on the assumption that the quantity of the services of capital

is fixed and $= 1$ that is, we examine only the changes of the prices of the factors of production in relation to the price of the product which we accept as a "numéraire".

It results therefore, that

$$\begin{aligned} P &= x_0 p_x + y_0 p_y \\ P + \Delta P &= x_0 p'_x + y_0 p'_y \end{aligned}$$

Since the relation $\frac{p_x}{p_y} = k$ and $\frac{p'_x}{p'_y} = k'$

we may further state

$$\begin{aligned} P &= p_x \left(x_0 + \frac{1}{k} y_0 \right) \\ P + \Delta P &= p'_x \left(x_0 + \frac{1}{k'} y_0 \right) \end{aligned}$$

whence it is seen that when $\frac{1}{k} > \frac{1}{k'}$ and when $\Delta P \geq 0$, the price of the services of capital $p'_x > p_x$.

and labour did not undergo any change, that is, that the existing capital goods were without loss transformed into new ones, — obviously in such a length of time as would make possible the introduction of such a transformation without economic losses — therefore either by the investment of amortization quotas in the production of goods of the new type, or in the case of technical cumulative progress, by the alteration of certain existing arrangements and their adjustment to the new state of technique for amortization quotas withdrawn from other arrangements.

All these processes I accept as continuous, which I treat obviously as an approximation to reality. Here, however, it is necessary to discuss in short the principle basis itself on which rests the comparability of the quantity of productive services given by capital goods technically differing from each other. Such a comparison may be criticized; it has been considered justifiable only in certain cases. If namely, we consider a capital good as a set of capital services obtainable at various times, and if we accept the relation of the quantity of services obtained in a unit of time to their whole sum as a technical datum then every capital good equally durable and capable of being transformed into others without loss may be treated as the same real capital, that is, as a set of that same quantity of capital services saleable in a unit of time. The technical changeability of capital goods may only then be sufficient as a basis for comparison when it brings about a definite relation of prices, which occurs only in perfect competition.

The definition "of the same quantity of the services of capital" given here is obviously arbitrary. It seems to me however to be useful for our purposes. Here it is a question of comparing the situation of the owner of a certain technical capital good before as well as after the achievement of technical progress, and also of the analyzing of the results of the marginal changes in the quantity of capital expressed in the „numéraire“ after the effecting of the changes in technique and the complete adjustment of production to these changes.

The defining of capital and its production services from the point of view of the saver (i. e. in terms of „numéraire“),

when differences in the technical characteristics of goods and capital services are not taken into consideration is necessary. It is necessary not only in the case of the comparison of technical changes introducing new relations of the prices of the factors of production but also when the substitution of certain factors by others is taken into consideration. The same method of definition should be applied even when the substitution results exclusively from changes of relations of the quantity of factors and takes place within the frames of that same set of the equal product curves, that is of that same production function. For the substitution of one factor of production by another is accomplished always by a change in the methods of production and brings with it the necessity of using factors for productive services technically different from previous ones, if however it is a question of capital it demands the change of its technical form.

It seems to me that the possibility of direct comparison exists only so long as the progress of technique does not appear in the supplying of capital goods of another durability than previously; such a circumstance would complicate the results of technical progress of the three categories discussed above, if it occurs simultaneously with other forms of technical progress. It presents in itself an interesting problem, but there is no place here for a detailed treatment of it¹.

Let us pass to the application of the cases discussed here of technical progress to Schumpeter's theory of profit from capital. Schumpeter does not classify anywhere technical progress dependent upon various possible long run effects. He examines technical progress exclusively from the point of view of the immediate results of its application and these are in every technical progress identical: they give additional profits to those entrepreneurs who get the start of others in the application of new methods. The disappearance of these profits is not however a sufficient reason for the disappearance of the rate of interest conceived as the rentability of real capital. Technical progress, with the exception of capital saving inven-

¹ See Knut Wicksell, *Lectures on Political Economy*, Appendix 2, Real Capital and Interest.

tions, raises the rate of interest from real capital even after the popularization of the change. The very disappearance of profits having the character of the rents of the entrepreneur, does not for that matter prove that social economy has reached a state of stationary equilibrium in which the price of the product would disintegrate completely into the payment of the original factors of production, that is of labour and land.

Schumpeter's theory concerns itself exclusively, as we have stated, with short term reactions, and within the limits of these time intervals remains true — it is in fact up to the present day the only theory of capital and profit from capital which deals with the influence of short term changes in the field of production on the capital and credit market. It is impossible, however, on the basis of this theory to draw any conclusions about how the interest rate behaves outside of these periods. In order to do this, it is necessary to discover to what type the technical progress under examination belongs, and Schumpeter never does this.

Schumpeter also fails to examine the connections appearing between the decisions of individuals concerning consumption and accumulation and the movement of the interest rate, — the problem of the financing of new productive combinations is taken care of completely with him by the possibility of creating a purchasing power, and transferring it to the entrepreneurs. The saving function is set aside completely and Schumpeter does not even attempt to explain it. As we see, this theory cannot take the place of the theory of Walras if it is a question of the explanation of a long-run reaction. It is less general than the Walras theory, in whose frames we may fit the newest results of the theory of production and exchange. The frames of the theory of Schumpeter are much narrower but perhaps because of the very fact that it describes exclusively immediate reactions, the results seem more realistic than in any other theory of profit from capital.

But on the other hand Schumpeter's theory is based on such specific suppositions that it cannot be the supplement to any theory describing a long term reaction so that it is not possible to bridge the theory of Schumpeter with any other theory of the interest rate.

The lack of a uniform theory of profit from capital which will explain both short term and long term changes may be observed. Only such a theory could form a connecting link between the theory of money and a general economic theory as for instance the theory of production and exchange.

The present state of the theory of business cycles and its division into monetary and non-monetary theories results to a certain degree from this mutual isolation of the theory of money and the general theory of equilibrium.

Streszczenie

Włodzimierz Hagemejer: Niektóre koncepcje teorii procentu

Teoria ekonomiczna wyjaśnia zjawisko procentu albo jako element stacjonarnej równowagi (teoria Böhm-Bowerka), albo jako wynik zmian dynamicznych w warunkach gospodarowania (Schumpeter). Dwa te zasadniczo sprzeczne poglądy na stopę procentową są najsilniej reprezentowane w literaturze współczesnej. Autor stara się tu podejść do tego problemu z punktu widzenia różnych typów równowagi, stojąc na stanowisku, że teoretyczne wyjaśnianie pewnego zjawiska musi być statyczne, choć niekoniecznie stacjonarne.

Jest to dość zapomniane dziś stanowisko L. Walrasa, który pojmuje stopę zysku z kapitału jako element zmieniających się w czasie stanów równowagi. Przyczyną przesuwania się punktów równowagi jest kapitalizacja i przybywanie coraz nowych ilości kapitałów rzeczowych, co obniża cenę usług kapitału, zmniejszając różnicę między zyskiem brutto kapitału rzeczowego a wydatkami na jego utrzymanie i odnowienie. Kapitalizacja wynika skolei z dążenia jednostek do zapewnienia sobie stałego dochodu w przyszłości. Walras nie wypowiada niczego wyraźnie o istnieniu lub nieistnieniu zysku z kapitału w stanie stacjonarnej równowagi, gdyż gospodarstwo stacjonarne nie jest u niego nigdzie przedmiotem badania, nie stawia jednak żadnej granicy spadku stopy procentowej w gospodarstwie rozwijającym się (*sovieté progressive* — w terminologii Walrasa termin ten ma oczywiście inne znaczenie niż roz-

wój gospodarczy Schumpetera). Pośrednio można więc wnioskować z teorii Walrasa, że w miarę zbliżania się układu gospodarczego do stanu stacjonarnej równowagi stopa procentowa zanika.

Tu leży jedna z głównych różnic między Walrasem a Böhm-Bawerkiem, który jako typowe uważał niedocenywanie u ludzi przyszłych potrzeb, a wynikające stąd *agio* dóbr obecnych ma utrzymać stopę zysku z kapitału także w stanie stacjonarnym.

Zdaniem autora teza o takim czy innym, typowym lub przeciętnym planowaniu zaspokojenia potrzeb obecnych i przyszłych nie może być udowodniona teoretycznie i jedynie obserwacja mogłaby wykazać, jaki jest przeważający wśród ludzi typ wartościowania. Dopóki niema co do tego pewności, ogólna teoria winna uwzględniać wszystkie, lub najczęściej spotykane typy motywacji gospodarczej. Sam zresztą spór co do wartościowania teraźniejszości i przyszłości traci swe zasadnicze ostrze, gdy przedmiotem badania jest równowaga zmieniająca się, a nie równowaga stacjonarna.

Autor wykazuje wyższość Walrasowskiej teorii kapitału nad teorią określonych dróg produkcji Böhm-Bawerka. Teoria Walrasa zbudowana na określonych relacjach cen dostępna jest analizie teoretycznej w wyższym stopniu niż konstrukcja Böhm-Bawerka, która ma charakter aksjomatu niemożliwego do udowodnienia. Teoria Walrasa opisuje jednak wyłącznie zmiany stopy zysku z kapitału, dokonywujące się w długich okresach (*long run equilibria*, według podziału Marshalla) i pozostawia zupełnie niewyjaśnione krótkoterminowe reakcje stopy procentowej.

Analiza teorii Schumpetera wykazuje, że w granicach, które sama sobie zakresła, teoria ta nie tłumaczy wystarczająco rzeczywistości. Jeśli bowiem nowa „kombinacja produkcyjna” jest wynalazkiem oszczędzającym na pracy według klasyfikacji Pigou, to nawet po upowszechnieniu się nowej metody produkcji stopa zysku z kapitału pozostanie wyższa niż poprzednio, pomimo zaniknięcia zysków przedsiębiorców o charakterze rent różniczkowych. Istnienie zaś tych różniczkowych *quasi-rent* jest według Schumpetera warunkiem istnienia stopy procentowej. Nawet więc po upowszechnieniu się nowej metody produkcji cena produktu nie będzie się dzielić bez reszty na wynagro-

dzenia pierwotnych czynników produkcji, t. j. pracy i ziemi, jak przyjmuje to Schumpeter. Schumpeter nie klasyfikuje nigdzie postępu technicznego pod kątem widzenia jego działania na ilości pracy i kapitału potrzebne do wytworzenia jednostki dobra, rozpatruje on jedynie natychmiastowe skutki innowacji technicznej, t. j. powstawanie rent różniczkowych. Skutek ten występuje oczywiście przy każdym rodzaju postępu.

Nie rozpatruje także nigdzie Schumpeter procesu powstawania nowych kapitałów drogą oszczędzania. Problem ten jest u niego pozornie jedynie załatwiony przez możliwość tworzenia dodatkowej siły kupna dla finansowania nowych kombinacji produkcyjnych.

Przy wszystkich wskazanych tu brakach, teoria Schumpetera jest podziśdzeń jedyną teorią zmian stopy procentowej w krótkich okresach i jeśli rozpatrujemy jedynie natychmiastowe skutki pewnej przemiany w dziedzinie produkcji, daje najbardziej realistyczny obraz rzeczywistości.

Pomimo jednak, że, jak autor sądzi, teoria ta jest dla wyjaśnienia reakcyj natychmiastowych dobrym narzędziem, jest ona jednak zbudowana na tak specyficznych założeniach, że nie może być uzupełnieniem żadnej teorii tłumaczącej długie okresy przystosowania.

Brak takiej jednolitej teorii zysku z kapitału, tłumaczącej zarówno zmiany krótko i długookresowe daje się dziś wyraźnie odczuwać i jest przypuszczalnie jednym z powodów izolacji teorii pieniądza i ogólnej teorii równowagi.

JAN DREWNOWSKI

THE CLASSIFICATION OF COMMODITIES AND THE PROBLEMS OF COMPETITION AND MONOPOLY

1.

The problem of the classification of commodities is not a question which has awakened any especially lively interest on the part of economists; nevertheless from the method of its solution there result consequences to which it would be worth while devoting some attention.

By the classification of commodities we shall here understand the method by which individual objects are divided into groups, which in turn are considered collections of the units of one economic good.

For a long time the classification of commodities, taken from practical life, according to their material characteristics, was traditionally accepted. This means that such a collection of objects which would not differ among themselves in any important or obvious way, as to appearance, physical characteristics, chemical composition, and the like, was considered as one good.

Little by little, however, this classification based upon so-called common sense, began to prove inconvenient, and for it a definition more correct from the point of view of economic theory as a whole began to be substituted.

We shall not present here the history of this change, — it would be a difficult thing, in fact, to undertake, as it is rarely possible to find an explicitly proven rejection of an old and the accepting of a new definition of a commodity.

We may say however, that from the time of the appearance of Pareto's "Manuel", economists quite generally began

to agree, that a commodity available at two different places or at two different times should be considered two individual goods ¹.

This distinct departure from a materialistic basis of classification was of great importance to the further development of this problem. The implications of this new definition remained, however, for quite a long time unnoticed.

It was only in the newest literature on the subject that such consequences were reached, if not completely, then at any rate, in certain quite important fields.

Limiting ourselves to those studies in which the problem is presented most clearly, we must mention the article of Prof. Hotelling ², where the costs of the change in the kind of goods we find treated in an analogical manner to the costs of transport.

The problem was most fully dealt with however, by Prof. Chamberlin ³ under the name of the differentiation of the product. He quite decidedly considers as different commodities not only commodities located in different places, but also advertised and unadvertised products, those sold by dealers having the good will of their customers and those not enjoying that good will, and the like. We have here, then, a definite breaking with the old materialistic definition of a commodity. In spite of its great valuableness, however, Prof. Chamberlin's book does not give a satisfactory solution of the problem of the differentiation of the product. We might find the reasons for this in the fact that the author did not perceive all of the consequences of the new definition of a commodity and while sometimes he took the new conception into consideration, at other times he entirely overlooked its consequences.

The best, for although very concise, nevertheless the most complete formulation of the new conception of the definition of a commodity may be found in a scarcely two page long digression on that subject in Mr. Lerner's article on monopoly ⁴.

¹ V. Pareto, *Manuel d'Économie Politique*, Chap. III.

² H. Hotelling, *Stability in Competition* (Economic Journal, 1929).

³ *The Theory of Monopolistic Competition* (Ch. IV and V).

⁴ A. P. Lerner, *The Concept of Monopoly and the Measurement of Monopoly Power*, *The Review of Economic Studies*, vol. I, pp. 167—168.

The author there explicitly states that the new definition is fundamentally different from the old one, and that a study of all its consequences is advisable.

The essence of the difference between the old and the new classification is, according to him, the casting off of the criterion of physical likeness, and the basing of the classification on the possibility of the substitution of the units of a commodity.

This means that such objects which are perfect substitutes for each other are to be considered one commodity. So, for instance, ten typewriters of one style which are located in a store might be considered by the dealer as one commodity "typewriters", since each of them is a perfect substitute for any other.

Nevertheless, the same wares located in two different places cannot be considered one commodity, since as a result of the distance, substitution will not be perfect.

But, again, if these machines, identical so far as construction is concerned, should be divided into two groups differing with each other only in name, where one of these names will be advertised and the other not, then they cease to be one commodity, since a machine with an unknown name will not be for the dealer a perfect substitute for a machine of a generally known name.

This sort of conception we may consider generally accepted at present. Mr. Lerner goes further, however; he states namely, that if we accept the perfection of substitution for a criterion in defining a commodity, then we may consider as one commodity objects which differ in their physical characteristics, granted they are perfect substitutes. If a certain quantity of goods or services may be substituted for another quantity of other goods or services, then both these combinations may be considered the same quantities of the same commodity, since the condition of a perfect substitution has been fulfilled¹.

The part quoted is the source of the idea of the present article. I devote most attention to it.

¹ This does not mean that the physical characteristics of commodities have no significance whatever for their classification. But they should be looked upon as one of the many features of the commodity such as lo-

The consequences of this new conception can sometimes seem paradoxical, which is the case with the examples of Mr. Lerner, but that impression must be accredited for by not being accustomed to the new conception.

And that is about all that has been said on the subject in literature up to the present.

The aim of the present article is to point out several further consequences of this modern classification of commodities, and the presentation of the theory of perfect and imperfect competition and monopoly in the light of this conception.

2.

If we define a commodity on the basis of the perfect substitutability of its units, then we must realize that we have not only broken with the materialistic (that is, based on physical characteristics) classification, but also we have abandoned the objectivity of that classification.

For we may not speak of perfect and imperfect substitutes without explaining in what circumstances that substitution is to take place. Objects which are perfect substitutes in one case may not be at all perfect substitutes in another.

At any rate, there must be some person to estimate that perfection or imperfection of substitution.

So then the old objective classification of a commodity gave place to a subjective classification. A new step was therefore made in the direction of the subjectivation of the economic theory. Definitions of commodities have been made similar to individual tastes, and have taken on a subjective character. We may now assume that each individual possesses a certain set of definitions for commodities, which is in a certain sense the supplement or rather the consequence of the system of preferences.

Thence we may draw the proposition which will be the basis of our further argument.

If the classification of commodities is based on subjective data, it must be different for each person active in the market.

cation in time, location in space etc. which are all propositions on which the substitutability of units of the commodity is established.

As a result, there must exist in the market a whole series of different independent and contradicting classifications¹.

Objects which are one commodity according to the materialistic, objective classification are defined according to the subjective classification not only differently than before, but also not uniformly. Before we had each commodity defined in one way, which could be said to be the definition accepted in the market. Now a whole series of definitions differing among themselves is to be found in the market at the same time.

Such a state of things is a necessary consequence of accepting the new basis for the classification of commodities and may be called the principle of the non-uniform definitions.

3.

For the individual consumer goods having for him equal utilities are perfect substitutes².

Since the estimation of the utility of commodities depends entirely upon the subjective point of view of a given individual, the definitions of commodities will be also the result of such

¹ An example may make it more clear. Let us take the commodity „news-papers“ and draw our attention to the attitude of different people towards it.

For the newspaper seller papers having the same price and selling equally well will be perfect substitutes and consequently he will classify them as one good which may be described as penny papers selling 100 copies per day.

For a reader interested in politics however the principle of substitutability will be quite different. The fact that the Morning Post and the Daily Herald would cost each a penny and sell at a rate of 100 copies per day has no significance for him. The criterion of substitutability is quite different for him. Lastly for somebody who uses old newspapers as wrapping paper only the quantity and quality of paper are of significance.

So we see how different criteria of substitutability may exist simultaneously and consequently how the classification of commodities may be different for different people.

² When a certain quantity of one commodity has the same utility as some quantity of another, it means that on the indifference map of these two commodities the price line must be coincidental with a certain section of the indifference curve.

a subjective judgment and must be considered as a reflection of tastes just as the shape of the indifference curves.

As a result of this, the systems of the definitions of commodities of two individuals bear the same relation to each other as the systems of indifferences, that is, that the possession of one of them gives us no information about the other.

We may say that there exists a sort of "no bridge principle" between the definitions of commodities for two individuals, just as between their utilities.

With the former conception of the definition of commodities, we imagined that the individual commodities, for instance, A, B, C, D , and so forth, are measured along the axes of the preference systems of individuals I, II, III, etc., and the differences between the individuals depend upon the fact that the shapes of the indifference curves between these commodities are different for each individual.

In the new conception, the difference goes further. The non-uniformity of the definitions of commodities is expressed so that we will not be able to speak of the possession of the goods A, B, C , etc., by individuals. We shall have to suppose that each of the persons possesses a special series of commodities for himself alone. Thus, for example, person I will possess commodities A, B, C, D , etc., person II, X, Y, Z , etc., person III, α, β, γ , etc.

We should observe that accepting this sort of conception does not imply any essential change in the way by which the individual equilibrium is reached. In the traditional theory equilibrium is reached by equalizing the proportion of the prices of two commodities with the proportion of their marginal utilities.

For this the knowledge of one individual system of definitions is sufficient. So, therefore, the individual equilibrium of the consumer will be gained in the same way as heretofore.

But the matter of calculating the collective demand from the individual systems of preferences is more difficult. As a result of the various definitions of commodities we are unable to sum up the demands made by individual persons. We shall have to reach our conception of collective demand by another way.

The matter of the definition of commodities presents itself differently for the entrepreneur than for the consumer.

The consumer tends to the maximalizing of utility. Therefore for him the definition of a commodity will depend upon utility. The entrepreneur tends to the maximalizing of profit, and as a result perfect substitutes, or in other words, one commodity, will be for him such objects whose purchase or sale will permit him to expect equal profit. Equal profit may be obtained by the entrepreneur from such products as have similar cost and demand functions at least in certain of their parts.

For entrepreneurs the principle of the non-uniform definitions will also be valid. The function of demand is a foreseen quantity, the description of its form depends therefore upon the individual entrepreneur. Furthermore, even if the expectations of all entrepreneurs would shape themselves similarly (for instance, if all are based on experiences in the past), the functions of demand for commodities materially similar would nevertheless be different as a result of the different demands of the consumers for a product sold by different entrepreneurs.

Nevertheless, however, there exists a fundamental difference between the method of the defining of commodities by the consumer and by the entrepreneur. Between the definitions of the individual consumers "there is no bridge", since they are based on utilities which are not comparable. It is possible to compare the definitions of entrepreneurs, however, for they are based on measurable quantities such as cost, prices and demand.

4.

The conception of perfect competition, which for a long time formed the basis of the theory of value cannot be maintained with our classification of commodities.

Perfect competition demands the existence of some general market for every commodity, where all entering into the transaction have access and where therefore one price for every commodity may be fixed.

This sort of conception is not possible when we accept the principle of non-uniform definitions, that is, when we accept

the simultaneous existence of differing definitions of a commodity of material uniformity, we cannot speak of a general market for one commodity.

It is obvious then that perfect competition is a conception possible of application only in the materialistic definition of a commodity. If we accept the subjective definition it becomes useless and unnecessary.

If the conception of a market for a given commodity is to have any sense at all, the commodity on that market must be uniformly defined. Since we have rejected the generally obligatory definition of a commodity we must also reject the conception of a general market for a given commodity. Instead of a general market we must establish the existence of a series of particular markets ¹.

The limits of each of these markets are outlined by the definition of a commodity, that is, we may consider as one market such an area where a uniform definition of a commodity will be accepted, at least for one of the parties entering upon the transactions, that is, for the buyers or the sellers.

We know, however, that in general the classification of commodities is different for each individual, and thence the acceptance of a market in which a group of persons would have a uniform classification of commodities is not ordinarily conceivable.

To avoid these difficulties we shall accept the conception of a particular market of such a type that on one side there will be only one individual. Then the classification of commodities will have to be uniform at least for one party in the market. Let us suppose that in the market we have one seller and a number of buyers.

We have already however observed that the classification of commodities may be of two types: a classification of the consumer based on utilities and that of the entrepreneur based on profit. Since the classification of commodities plays a decid-

¹ The conception of a particular market has been used already for some time in connection with imperfect competition. Comp. e. g., E. Chamberlin, *The Theory of Monopolistic Competition*, p. 68 and following. On the present article it will be described in a somewhat different way than the accepted one.

ing rôle in the defining of the character of our particular markets, therefore we must treat separately these two different categories of persons.

According to this criterion we may divide the particular markets into a series of types, namely into markets where:

- A.* The entrepreneur sells to the consumers.
- B.* The consumer sells to the consumers.
- C.* The entrepreneur sells to the entrepreneurs.
- D.* The consumer sells to the entrepreneurs.

These four types of particular markets may be in turn divided into two groups, including in the first types *A* and *B*, where the buyers are the consumers, and in the second group, types *C* and *D*, where the buyers are the entrepreneurs.

On markets of the type *A* and *B* we shall have on the part of the single seller one classification, and on the part of the buyers-consumers as many classifications as there are buyers on the market. By the expression "presence of buyers on the market" we understand those ready to purchase the commodity sold by the seller. Each of them defines that commodity in his own way, and since the definitions of the consumers cannot be compared with each other, we must consider each of these definitions as differing from each of the others. We may also suppose that the definition of the commodity sold by that seller is different for each of the buyers from the definition which he gives to any commodity sold by some other seller on another market. An identical definition by the buyer-consumer of commodities sold by two different sellers is not naturally impossible, but it must be looked upon as a special coincidence. The repetition of such a coincidence, that is, a situation in which two consumers define in the same way the commodities sold by the same two sellers, must be admitted very improbable, as very improbable as the identical shapes of the indifference curves of two persons.

As a result, the seller, selling to consumers on some particular market must be acknowledged a monopolist in that market, for he is the only supplier of the commodity he sells.

The matter presents itself somewhat differently on particular markets of the types *C* and *D*, where the buyers are entrepreneurs.

Here we shall have one definition on the part of the sellers and a series of definitions on the part of the buyers-entrepreneurs.

But these definitions by no means must be necessarily different for each of the buyers. The entrepreneurs define a commodity according to the expected profits which it will bring them. Here will be probable a partial or even complete uniformity of definitions on the part of the buyers. Furthermore that uniformity may include more than one seller. In such a case our particular market would be somewhat widened (for the limits of the market are described by the uniformity of the definition of a commodity) and would include more than one seller.

It is obvious then, that, a market where the buyers are entrepreneurs may have the character of a monopoly, but it may be also a duopoly, an oligopoly or imperfect competition, and sometimes goes as far perhaps as local perfect competition.

In closing this analysis of particular markets of different types we may say that the seller always has a monopoly when he sells to consumers, but he may be a monopolist, a duopolist an oligopolist, or a competitive seller when he sells to entrepreneurs.

We have explained already why we have had to reject the conception of perfect competition and substitute for it the system of particular markets. Now we may ask ourselves if that new construction is opposed to the accepted notions of imperfect competition and monopoly.

As for imperfect competition, in its generally accepted formulation, it is based on the conception of a general market just as perfect competition, and differs from the latter only in the smaller number of sellers and as a result, in the imperfect elasticity of the demand curve for the commodity sold by them. The price of the commodity is accepted in equilibrium as an identical price for all sellers, just as in perfect competition.

Imperfect competition understood in this way is inconsistent with the principle of non-uniform definitions for the same reasons as perfect competition¹.

¹ In connection with imperfect competition, there is indeed applied the conception of particular markets; usually it is not, however, exactly formulated and above all it does not exclude at all the existence of a general market, as the system of particular markets here introduced does.

The problem is different with monopoly. In a monopolistic market in its traditional meaning, the principle of non-uniform definitions is not offended, because even in our postulates, a monopolistic, that is a single, seller may and must have a uniform definition.

Only the application of the conception of a monopolistic market was broadened.

If we accept the construction of particular markets we have monopolists everywhere where the traditional theory finds at most an imperfect competition. Instead of a general market we have a system of particular markets, mostly monopolistic.

On the particular markets, however, we may have sometimes not only a monopoly, but also various degrees of competition up to and including perfect competition.

However it is necessary to differentiate distinctly this widened form of particular markets, which are possible with our postulates, from the concept of the general market used by the traditional theory. For us the oligopoly or perfect competition are rather exceptional phenomena and always of only local importance.

The substitution of a system of particular markets for the general market should not be, however, in any case understood as the evasion or diminishing of the importance of the interdependence of economic phenomena.

Demands for all commodities are mutually dependent on each other; this fact is taken into consideration in the traditional theories of perfect and imperfect competition and monopoly. In our postulates we should perhaps place an even greater stress on this feature in order not to give the impression that equilibrium on every particular market does not depend on what is going on in neighbouring markets. The system of our particular markets is combined with a network of interdependability, that is, of complementarity and competitiveness¹ between the individual commodities. Independence may be considered an exceptional phenomenon.

¹ See the modern formulation of these conceptions in the article of J. R. Hicks and R. G. D. Allen, *A Reconsideration of the Theory of Value* ("Economica" 1934).

So then the system of particular markets does not oppose in any way the theory of general equilibrium.

5.

In the preceding paragraph we were interested in the results given by the accepting of the principle of a non-uniform definition for the market forms and therefore for exchange.

Without a doubt, however, the accepting of this principle implies certain changes also in the theory of production.

The present approach to the theory of production with the help of the conception of the production function¹ is insufficient, because it includes only the technical conditions of production.

The production function gives us changes in the quantity of the product, resulting from changes in the quantity of the factors. However, the changes in the quantity of such factors which are not followed by changes in the quantity of the product, escape us in this type of conception. Such factors are, for instance, advertising, transport, and the like. The results of applying factors of that sort cannot be presented in the diagram of the production function² since they are not essentially changes of quantity but the changes of the quality of the product.

In accordance with our postulates, each commodity defined by the entrepreneur will have a certain peculiar function of costs and a function of demand, whence we may easily receive the amount of the maximum monopolistic profit.

We may therefore draw a sort of Knightian curve³ in a diagram, where on the axis of the abscisses we shall measure the factor of production X , changing not the quantity but the quality of the commodity, and on the axis of the ordinates, the monopolistic profit obtainable.

The ordinates of the curve will designate the monopolistic profit for particular commodities, which are produced

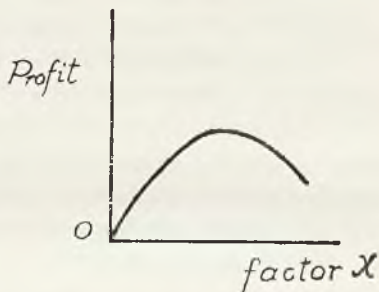
¹ Comp. e. g. E. Schneider, *Theorie der Produktion*, p. 2 and following.

² E. Schneider, l. c.

³ F. H. Knight, *Risk Uncertainty, and Profit*, p. 100.

by the application of a varying quantity of the factor X (and of a fixed quantity of other factors). There will be an infinite quantity of these commodities, for each additional, even the very smallest unit of the factor X , changes the quality of the commodity.

On this basis, we may solve the problem of the so-called differentiation of the commodity and work out further consequences of the principle of non-uniform definitions from the theory of production.



These studies, however, lie outside of the scope of the present paper, which sets itself the more modest task of presenting the new point of view and of pointing out the direction in which its consequences should be worked out.

Streszczenie

Klasyfikacja dóbr wobec problemów wolnej konkurencji i monopolu

Definicja dobra ekonomicznego uległa w ostatnich latach pewnej ewolucji. Według starej definicji za jedno dobro uważano przedmioty, nie różniące się między sobą materialnie t. j. własnościami fizycznymi, składem chemicznym i t. p.

Mniej więcej jednak od czasu ukazania się *Manuel* Pareto przedmioty identyczne materialnie zaczęły być uważane za różne dobra w wypadku, gdy znajdują się w dwóch różnych miejscach lub są rozporządzalne w dwóch różnych momentach czasu. Szasem odstąpiono jeszcze dalej od materialistycznej definicji. Np. ten sam towar reklamowany i niereklamowany zaczęto uważać za różne dobra. Pisali na ten temat prof. Hotelling i prof. Chamberlin. Najdalej jednak posunął się A. P. Lerner, formułując jednocześnie zasadę nowej definicji, opierając ją na substytucjonalności. Według niego przedmioty, będące doskonałymi substytutami, są jednym dobrem, a materialne ich właściwości nie mają w tym względzie żadnego znaczenia.

To definitywne zerwanie z tradycyjną materialistyczną definicją zawarte jest w artykule p. Lerner'a p. t. *The Concept of Monopoly and the Measurement of Monopoly Power* w tomie I "Review of Econom. Studies" (str. 167 i 168). Wspomniany artykuł stanowił źródło pomysłu do niniejszej pracy.

Przyjęcie substytucjonalności jako podstawy definicji dóbr pociąga za sobą rezygnację z obiektywności tej definicji.

Substytucjonalność musi być oceniana tylko subiektywnie. Stąd definicje dóbr stają się subiektywne. Konieczną konsekwencją subiektywności definicji staje się jednoczesne istnienie na rynku szeregu różnych sprzecznych z sobą definicyj. Możemy więc powiedzieć, że przy nowej podstawie definicji dobra obowiązuje zasada niejednorodności definicji.

Konsument będzie oceniał substytucjonalność różnych przedmiotów na podstawie ich użyteczności.

Stąd definicje dóbr pojedynczego konsumenta będą jemu tylko właściwe, a system tych definicyj będzie można traktować analogicznie do systemu preferencji jako przejaw gustów konsumenta.

Tak ujęte definicje poszczególnych konsumentów nie będą z sobą porównywalne, tak że każdy z indywidualnych systemów definicyj będzie zawierał dobra jemu tylko właściwe.

Przedsiębiorca definiuje dobra nie na podstawie ich użyteczności lecz ich zdolności do przynoszenia mu zysku.

Zasada niejednorodności definicji będzie obowiązywała także i dla niego, bo operuje on wielkościami przewidywanymi, a więc o subiektywnym charakterze. Te jednak wielkości są zasadniczo wymieralne; stąd też definicje dóbr dokonywane przez przedsiębiorców można między sobą porównywać.

Pojęcie doskonałej konkurencji wymaga istnienia powszechnego rynku na każde dobro, a stąd i powszechnie obowiązującej jego definicji. Po przyjęciu zasady niejednorodności definicji nie można stosować pojęcia doskonałej konkurencji.

Pojęcie rynku powszechnego zastąpimy szeregiem rynków szczególnych. Definicje dóbr wyznaczają granice tych rynków, to znaczy, że za jeden rynek będziemy mogli uważać taki obszar, na którym obowiązuje przynajmniej dla nabywców lub dla sprzedawców jednolita definicja dobra.

Rynki szczególne podzielić można na dwie grupy. Do

pierwszej zaliczymy rynki, na których nabywcami są konsumenci, do drugiej rynki, na których nabywcami są przedsiębiorcy.

Różnica pomiędzy temi dwoma rodzajami rynków będzie wynikała z różnego charakteru definicij dobra przedsiębiorcy i konsumenta. Rynek szczególny, gdzie nabywcami są konsumenci, będzie miał charakter monopolistyczny, rynek, gdzie nabywcami są przedsiębiorcy, może mieć rozmaity charakter, od monopolu do wolnej konkurencji.

Zastąpienie rynku powszechnego zbiorem rynków szczególnych nie może być jednak rozumiane jako odstępstwo od pojęcia powszechnej równowagi ekonomicznej. Współzależność wielkości ekonomicznych może i musi być uwzględniona w tym nowym systemie.

Przyjęcie zasady niejednolitej definicji ma pewne konsekwencje także i dla teorii produkcji. Jako przykład tych konsekwencji podana jest nowa interpretacja krzywej Knightowskiej. Całość tego zagadnienia pozostawiona jest jednak bez szczegółowego rozpatrzenia.

Artykuł niniejszy podaje tylko najważniejsze konsekwencje nowej definicji dobra i wskazuje kierunek dalszego badania, nie zajmując się systematycznym opracowaniem tych konsekwencji. Pracę w tym kierunku jednak, zdaniem autora, warto jest prowadzić, bo może ona doprowadzić do wyników o poważnem znaczeniu dla teorii ekonomji.

ABSTRACTS FROM CONTRIBUTIONS TO ECONOMICS PUBLISHED IN POLISH IN THE PERIOD OF 1932-1934¹

Dr Tadeusz Brzeski, Professor of the University of Warsaw, *Polityka pieniężna, Warszawa 1932 (Monetary Policy)*, pp. 272.

The above book forms the continuation of a study published in 1928 under the title of *A Theory of the Monetary System* which was devoted to a theoretical analysis of contemporary monetary phenomena; practical problems have been, as far as possible, separated from theoretical problems and were discussed in a systematical arrangement. This theoretical foundation of the *Monetary Policy* must be characterised in a short outline before presenting the actual contents of the book.

Monetary phenomena have been tackled from two sides i. e. monetary demand and monetary supply. The notion of monetary demand differs from that used in literature which means demand of cash (*Geldbedarf* in German economic literature). This term indicates here a demand for monetary transactions which arises from economic life and shows a smaller or greater intensity. It depends on the relation of natural to exchange economy, where within the latter the extent of specialization does not come into consideration, while on the other hand the division of production into stages of production influences the frequency of monetary demand. If we compare this with the well-known equation of exchange, — the volume of trade multiplied by the price-level equals the amount of money multiplied by the rate of circulation, — monetary demand, as the author understands it, will correspond with what

¹ Comp. also *Studja Ekonomiczne*, I 1934.

is known as the volume of trade, accepting a definite height of the price-level. On the side of monetary supply various kinds of means of circulation as well as the velocity and frequency of circulation have been distinguished. In dividing monetary means, the moment whether the individual using these means for transactions had to buy them previously, by selling real values or by contracting a loan, or whether he acquires them, as it were, at the time of concluding the transaction, was accepted as principal criterion. The first case arises in relation to all kinds of metal money and to already existing banknotes, the second with credit monetary means consisting of two large groups, banknotes which originate from the granting of discount credit, and compensation money (*Buchgeld*). This distinction is important because common pecuniary resources, contrary to credit means exist before the conclusion of a transaction and are consequently the expression of a previous system of conditions. Within pecuniary demand a detailed analysis of the division of pecuniary resources has been carried out according to their destination, i. e. in connection with corresponding departments of pecuniary demand and consequently, above all, the division into consumption and production money in its different varieties. A similar analysis of the velocity and frequency of circulation enabled the author to distinguish a whole series of circulations i. e. ways taken by money among real values.

This detailed analysis seemed necessary in order to grasp the infinite complication of pecuniary phenomena and their, as it were, independent appearance, facts which are so often disregarded in the simplifications met with in the literature on monetary problems. Equally complicated must be the analysis of the manifold configurations of monetary demand and supply in their reciprocal relation. This analysis has been carried out by immobilizing now one and then the other side, with a simultaneous examination of the occurring changes. The relation, at any given time, between monetary demand and supply results in the value of money in the sense of the purchasing power of the monetary unit in relation to real values which by-the-by is a far reaching simplification, if we understand by it the purchasing power in relation to all goods whatsoever.

The causes of the changes of the value of money may originate not only on the part of money but also on the part of goods, i. e. on the part of monetary demand. In particular it may be assumed that the changes of the general price level may also be the expression of the changes of productivity, that is to say, changes on the part of real values. The conditions in which particular kinds of pecuniary resources originate, bring about the fact that among them are to be found such whose quantity changes in close dependence on the changes of monetary demand, and such whose changes are separated from this real substratum. According to this, monetary means can be arranged in a gradual scale in dependence on the intensity of the manifestation of the connection or separation from the real substratum. These are phenomena of the equilibrium of monetary demand and monetary supply, or of the disturbance of this equilibrium; pecuniary resources which in their nature bear the conditions of this equilibrium, are defined as natural, others as artificial.

The views represented by the author are similar to the so-called quantitative theories, above all in the sense that money is treated as an objective quantity, having no connection with the particular circumstances (income) of individuals. The value of money should be looked for in the service it renders. Money is in its nature — which, however, does not determine its genesis — an intermediary in exchange, hence with a system of production based on division of labour it makes possible an increase of values, brought about by exchange. There are permanent pecuniary resources serving for a number of exchange activities whose value will be the capitalization of these services and non-permanent pecuniary resources arising and vanishing with one act of exchange (compensation money). It follows that for the value of money the value of the material from which money is made is not of primary importance; if in spite of that preference is to be given to metal money (in present-day conditions to gold money) it is the result of the fact that, as it has been proved by the experience of mankind up to the present time, it is a monetary means which best guarantees the normal functioning of the monetary system.

The distinguishing of natural and artificial pecuniary

resources serves in the *Monetary Policy* not only as the basis for the grouping of problems but also as the *leitmotif* of the views expressed in the book. The monetary system should be based on natural pecuniary resources for only if they exist the independent influence of money on economic life can be eliminated. Money in the role of "indifferent" intermediary in exchange should be regarded as ideal. The task of monetary policy is to secure an efficient functioning of these natural pecuniary resources. Artificial means, were it only in the form of billion or monetary systems which appear in periods of abnormal economic conditions are an unavoidable and iterative phenomenon, and consequently also in relation to these artificial pecuniary resources there must exist a policy establishing the principles either of their normal functioning or of measures mitigating their harmful consequences, or leading towards their liquidation.

In the chapters devoted to internal monetary policy are discussed the problems of the efficiency of the monetary system, the real and local equalization of the purchasing power of money and the stability of the price-level. By the problem of efficiency is to be understood a tendency towards the best use of pecuniary resources by means of an increase of the velocity of money circulation, by an increase of the range of credit transactions and a decrease of bank reserves. The first two of the problems mentioned above arose in connection with the question of the development of credit organisations and the economic development in general, hence they have only an indirect bearing on monetary policy and are affected by the measures of the general economic policy. As for cash reserves of common credit institutions, this question belongs to the problems of their rational management and is settled by experience and controlled by a properly organised supervision of their activity. The case is different with institutions issuing monetary means of credit. The cash reserve of banks of issue consists of gold stocks, but only in so far as these are owned by them, and not of gold which can be at any time withdrawn by an exchange of banknotes. The same applies to stocks of foreign drafts. The gold reserve established in the statutes of present-day banks of issue in general at between 30 to 40% of the

issue is, from this point of view, too high. Only in the U. S. A. there are regulations for maintaining such a reserve when issuing compensation money. The generalization of this principle which forms an analogy with the regulations about the issue of banknotes should be considered as desirable.

By the problem of real equalization of the purchasing power of money should be understood the question of the distribution of pecuniary means of credit among the various kinds of monetary demand; it is sufficient to mention here the question of supplying agricultural and industrial production with pecuniary resources, of giving means to the so-called financial capital, i. e., in the first place to exchange capital, and of turning them over to circulating and investment capital. All these are at present extremely important problems of the policy of banks of issue, which only in rare cases can be defined into strict principles. In this place the question was touched of the shifts in money supply caused by changes in the fiscal revenue, because monetary policy must also be concerned with these consequences of fiscal policy. Finally the problem of the territorial equalization of monetary supply, besides some others of lesser importance, finds expression in the question of a centralized or decentralized organization of banks of issue.

The stability of the price level as a possible postulate of monetary policy must be discussed against the broader background of the phenomena of the oscillations of business-cycles. The problem of the trends of the price-level changes should be connected with a fundamental discussion of the value of contemporary monetary systems and of their future. Oscillations of business-cycles can be examined here only from the point of view of their connection with monetary phenomena i. e. in so far as they are conditioned by them and in so far as they find expression in them. It is due to this fact that attention was drawn to the co-existence in the contemporary monetary system of relatively non-elastic elements in the form of metal money and relatively more elastic ones in the form of credit monetary means; if the latter help to increase production, the former must at a certain stage of the business cycle exercise a checking influence. From this

the conclusion can be drawn that, owing to the nature of monetary means, the prices in the beginning stages of the business cycle can be too high, while in later stages too low in comparison with real conditions; this, however, does not give any foundation for proving the frequently advanced postulate of the stability of prices. Criticism of these conceptions is based on the statement that the oscillations of the price level are not only a fiction created by money, but can also be the reflection of real shiftings in the degree of productivity. Their concealment would deprive economic life of an orientating factor. Therefore all efforts should be directed towards a perfect functioning of the monetary apparatus, and, particularly and above all, towards a chief organ creating credit monetary means, such as the bank of issue. The role of the bank of issue depends on such an organization of the credit market as will permit it to exercise an effective influence by means of discount policy, the most classical means besides credit restrictions necessary in certain conditions and by supplementing it by the most modern means, the so-called policy of open market. The discussion of the problem of the effectiveness of discount policy leads to the rejection of both its over- and underestimation; in general one can say, that the task of the bank of issue consists in correcting the irrationality of economic life whose conscientious observer it should be. It should be mentioned that to this corresponds above all the traditional policy of reliable business management.

In relation to the external rate of exchange of money the similar postulate of maintaining a stable exchange should be examined. Oscillations of the rate of exchange are the expression of a disturbance of equilibrium in the economic relations between a given country and foreign countries, but at the same time by influencing export or import they can lead to its restoration, consequently the policy of a stable exchange if it is at all possible, should be from this point of view considered improper. In connection with these questions should be discussed the phenomenon of the international shifts of real capitals and the shifting of gold of two kinds, i. e., compensation gold and credit gold.

Monetary policy is concerned with the question of the

relation of these phenomena to the rate of exchange of money and the role which can be played by discount policy in them. Among particular problems were discussed in a brief outline the question of transfer of the currency, bank drafts considered as a temporary phenomenon, and the policy of the international distribution of gold conducted in the form of prohibitions imposed on the export or import of gold. Finally the organization of the internal bank draft market and the organisation of international paying conditions requires registration on account of certain important contemporary events; for the former a characteristic symptom can be the introduction of a legal monopoly of the bank of issue in relation to bank drafts (Germany), for the latter the organization of the International Clearing Bank at Basel.

In the group of artificial monetary means a first-rate place is occupied by change money. Economic literature little deals with this money in spite of the fact that it plays an important role in modern monetary systems, leaving this question to legislative and administrative practice. Monetary policy must occupy itself with the question of securing its proper amount, neither too large nor too small, and its relation to principal money, above all from the point of view of the magnitude of its units. In general the postulate should be advanced of a more rigoristic operating with billion by regulating its issue in strict connection with the policy of the bank of issue, which would give a better guarantee than the hitherto used simply quantitative criteria.

Billion money is that kind of artificial money which is artificial in its very nature, and forms a normal component of the monetary system. To these criteria do not correspond other cases of artificial money, which can be a phenomenon appearing periodically or once only in exceptional conditions. Here belong in the first place the issue of bank notes, which, in a degree difficult to be grasped precisely, separates itself from its natural foundations by the deterioration of the bills of exchange which manifests itself in an increased insolvency of the debtors of the bank of issue and in prolongations of discount credit (suspension). Another case is a non-percenting credit in favour of the state, the granting of which without

metal backing is stipulated by the statutes of some banks of issue, even if it were in the form of facilitating transactions with state papers as in the Federal Reserve Banks of the U. S. A. Sporadically also appear extraordinary issues in favour of economic life (English pound in 1914) or in favour of the state, called forth by exceptional circumstances. A certain variety is formed by an issue for investment purposes, with the aim of giving work to unemployed or of an economic equipping of the country, according to postulates advanced simultaneously from various quarters. In relation to all these cases it is difficult to occupy a doctrinary standpoint and to reject them on principal; they can have their foundation in given conditions if they are the lesser evil.

An important chapter of monetary policy is the problem of monetary reforms. For modern conditions, of practical importance are not so much some fundamental transformations of the monetary system as the restoration of a deteriorated system or changes in the existing. On the basis of recent experiments the stages of a rational restoration of deteriorated or unsettled money can be sketched. Internal stabilization in the sense of reducing oscillations in the purchasing power of money to limits which do not make calculations impossible should go together with the stabilization of the external rate of exchange in relation to gold. A greater guarantee of success is supplied by a proceeding tending to base legal stabilization on the already carried out actual stabilization. With this can be connected changes of the magnitude of the monetary unit either having the character of calculation changes (replacement of small by greater units) or real changes (valorization in order to restore the former magnitude). To the measures which aim at a modification of the existing monetary system could be counted such postulates, as the decrease of excessive metal covering, or such reforms as the introduction of the gold bullion standard.

The last great problem of monetary policy is the monetary policy of the future, or rather, using strict terms, the perspectives of the monetary system of the future. The modern system is, according to frequently expressed opinions, already in the near future endangered by lack of gold in view of its

more and more insufficient production in comparison with the increasing demand. A critical analysis of this argument demonstrates that it cannot, up to the present, refer to irrefutable facts, nor to the fulfilment of the pessimistic supposition as to the amount of the future production of gold. If, in the future, the lack of gold actually made itself felt, there would still exist possibilities of saving gold in monetary use by the development of credit paying means which can be based on the progress of the organization of economic life, and moreover monetary demand could draw from gold absorbed for utility purposes. Conceptions of replacing gold by some other monetary metal, i. e. silver, or gold currency by bimetalism, should be treated with scepticism. Even in these unprosperous circumstances and in spite of a possible decrease of prices as the consequence of the growing appreciation of gold, gold currency would remain the comparatively best monetary system. One can not exclude one more, the last, possibility of preserving gold currency, i. e., by making gold money more like billon; one could imagine this in the following way, that a smaller amount of gold in the monetary unit would have a greater nominal value in relation to commodities; this would have to take place by means of an international agreement and by using measures prohibiting an increase of the price-level. Less real are the conceptions of an international unification of the monetary system by means of a monetary unit, one has to realise that the monetary system of each country, even in spite of external identity is really something different, because it is such as the foundation of the economic life of a given country. An improvement of the economic organization can create conditions for the improvement of the monetary system, in particular by enlarging the range of credit money in the direction of using it for financing longer and longer economic periods; one however can suppose that for the development of credit money a system of free competition would be more advantageous than a system made non-elastic by the monopolization of economic life.

Dr Edward Taylor, Professor of the University of Poznań, *Uwagi o polskiej polityce pieniężno-kredytowej*. Warszawa 1932. (*Some Remarks on the Polish Monetary and Credit Policy*), pp. 23.

The author aims to prove the harmfulness of the administrative regulation of the credit market. The author points out that the problem is based on the administration of economy with existing capitals and upon their growth. The lack of capital was felt by Polish provinces before the Great War, the decrease of capital, moreover, caused by the war and inflation is calculated by the author to be 22—27% of the former state. The growth of capital in the years following the war is relatively slow, and to the end of 1930, the quantity of money capitals (bank deposits) amounted to scarcely about 56% of the pre-war state.

Among the causes of this fact, the author names a heavy burdening of the social income by national and local taxes, and by social utility expenditures; in detail, moreover, he discusses the monetary and credit policy, which also worked in the direction of diminishing capitalization.

The *maximum* interest rate has been fixed administratively in Poland, since the year 1924, and has been steadily lowered without any consideration as to the demand of capital and the supply.

This fixing of a *maximum* interest rate has resulted in a diminishing, for the time being, of the growth of new savings, since the chief motive in saving is the desire to increase one's income. Furthermore, even from the capitals accumulated at present, a large part has been located abroad, which would never have taken place if the difference between the rate of interest paid in Poland and abroad had been greater.

A second negative result of the regulation of the interest rate is the irrational investing of capitals. The capitalist invests his money in enterprises with such a percentage of profit, as will be larger than that paid for capitals placed in banks. Since however, the latter is artificially decreased, therefore he also will invest in enterprises with a smaller percentage of profit than would correspond to the actual amount of cap-

itals on the market. Therefore relatively too much capital is tied up in enterprises with a productivity calculated for a too distant future, designed for speculation. The division of capital is not economical, increasing the quantity of stable capital to the detriment of circulation capital. As a result the income rate of social capital is lower than that which should correspond to the quantity of capital in the country, capitalization is too small. At the same time this increases the need for circulation capital, and in view of the fact of the impossibility of satisfying this need on the organized market, an illegal market arises, which does not observe the laws concerning the *maximum* rate of interest.

In this same direction tends the policy of the Bank of Poland. It is based on the artificial maintenance since the year 1924 of a low discount rate. Since such a rate must increase the pressure on the Bank for credit, therefore the Bank safeguards against it by the contingency of credits, that is, defining of a *maximum* sum of credit for each client. The system of contingencies, being an inevitable consequence of an artificially low discount rate, calls forth as a result in the case of certain privileged investors an insufficiently profitable use of capital, hyper-investments, and the like, and for others not allowed to share in the contingencies, the impossibility of conducting the most profitable and sound enterprises.

The granting of direct credits by the Bank of Poland also has harmful results. Private banking, as a result, has a decreased turnover, and in addition with it a larger risk, which increases the administrative costs and premiums for risk in private banks.

The intention of the Bank of Poland, it would seem, is to lower the price level by a sufficiently cheap credit. In the same way the regulation of the percentage rate of other banks is motivated.

The author submits these views to criticism. The Bank of Poland does not satisfy entirely the demand for credit. Its low percentage rate is for borrowers a source of rents. Rather the regulated rate of other banks, and especially the illegal interest rate of extra-bank credits, influences the prices of products.

Since however, regulation raises the level of the latter rate, therefore it increases, opposite from what intended, the price level.

The regulation of the percentage rate makes difficult the differentiation of credits according to risk. Banks apply an equal rate to all credits, transferring the risk of worse enterprises onto more certain ones. In this way it awakens risky speculation.

Production, due to the regulation of the interest rate, does not develop satisfactorily.

The author points out that the interest rate on the private market was always considerably higher than the regulated bank rate; (for banks 11⁰/₀, for extra-bank credit 15⁰/₀). And so for the years 1926—27 it was 25⁰/₀ yearly, for 1928, 19⁰/₀, for 1929, 17.5⁰/₀. In the years 1930—31, the percentage rate on the private market according to the estimation of the author increased to 20—25⁰/₀.

The author advances the postulates (1) of the abolition of the limitation of the interest rate for private banks, and (2) of a change in the discount policy of the Bank of Poland.

The rate of the Bank of Poland should be first of all equalized, and afterwards raised above the freely-shaping rate of deposit banks.

The author considers the period of depression as a proper time for the realization of his postulates. He thinks that in a relatively short time the banks will be able to take from the extra-bank credit market its clientele. He does not fear, furthermore, important disturbances in economic life, outside of a temporary rise in the rate of interest.

The author states that the difficult position of debtors is brought about partly by the fact, that as a result of the artificially lowered percentage rate, they borrowed too heavily on the basis of false calculation.

The author however, is against a further lowering of the interest rate to the advantage of financially weakened debtors, motivating his opinion by the fact that the chief cause of economic difficulties in Poland is a small amount of capital and a too small growth of social capitalization.

Hence, the maintenance of the interest rate on an artificially low level, or its further lowering, would only make the situation worse.

Dr Ferdynand Zweig, professor of the University of Cracow, *Cztery systemy ekonomji. Kraków 1932*. This book has been published under the title *Die vier Systeme der National-Oekonomie (Universalismus, Nazionalismus, Liberalismus, Sozialismus) Berlin 1932, Carl Heyemanns Verlag, 147 pages*.

Dr Ferdynand Zweig, professor of the University of Cracow, *Finansowanie konsumpcji, Kraków 1930*. An enlarged edition of this book entitled: *The Economics of Consumers' Credit. London, P. S. King & Son Ltd, 1934, pages 112*.

Dr Władysław Malinowski, *Stabilizacja waluty w Polsce w latach 1924 i 1927 w świetle literatury. (The Stabilization of Currency in Poland During the Years 1924 and 1927 in the Light of Literature). Kraków 1932. Published by the Economic Society in Kraków, 115 pages*.

Dr Władysław Malinowski, *Teorja ilościowa pieniądza w polskiej literaturze ekonomicznej (1918—1932). (The Quantitative Theory of Money in Polish Economic Literature (1918—1932)). Kraków 1934. Published by the Economic Society in Kraków, 40 pages*.

The inflation which took place during the war and in the years just following effected considerable changes in the structure of the economy of different nations. In many cases a number of years was necessary to return to an economic system whose currency would be stabilized. In Poland currency difficulties appeared in a particularly glaring light. Inflation lasted longer than elsewhere, attempts at stabilization passed through many phases, before they were solved successfully.

In the years following the war, a relatively large publicist and scientific literature on money sprang up. Economists as well as politicians wrote about money. It is obvious that questions

concerning various conceptions of money in theory and in politics became not only problems of economic science but also a burning social issue. In order to analyze and enclose in a synthetic frame the money literature of the years following the war, it is therefore necessary to include not only strictly theoretic works, but also the large collection of political economy studies. The above-named studies of the author are devoted to the discussion and characterization of the whole literature on money from 1918—1932 in Poland. Each book supplements the other, and together they give a complete picture of the points of view of Polish economists on money problems.

The first study (Kraków 1932) is an analysis of the literature devoted to the character of the inflation and stabilization of currency in Poland, and also a discussion of economic programs tried out during inflation and during the period of attempts at stabilization. The second study (Kraków 1934) embraces deliberations on the subject of the points of view of Polish economists on the theory of money.

The first study begins with a discussion of the methods of the stabilization of money. The author starts out with general formulations of the quantitative theory of money of Irving Fisher (equation of exchange), on this background formulates conceptions of inflation and deflation, and comes to the conclusion that theoretically every change in the general level of prices we call inflation or deflation. Changes in the general level of prices may take place as a result of changes in any of the elements of the equation of exchange, or coordinated changes of several elements, provided that equalizing changes of the remaining elements do not take place. The author omits the problem of the exact definition of the conception of the general level of prices, which he uses in the generally applied sense, as a statistical conception. The author thinks that the above formulations are not very precise and do not solve a number of problems; nevertheless for the purposes of the study of money inflations where a great quantitative increase of currency takes place, the scheme is in practice satisfactory. It is only in a certain sufficiently strong quantitative strain we are able in practice to discover inflational changes. The above problem is, according to the author, the weakest point in the

quantitative theory. In practice however, as the author points out, the above conception is within certain limits satisfactory.

The author indicates that basically all economists who accept the quantitative theory of money are satisfied with the above conclusions, no matter what conception of the equation of exchange they work from. (Compare especially Ludwig Mises, *Theorie des Geldes und der Umlaufsmittel*, München 1924, pp. 224—225).

In the further course of his deliberations the author introduces a certain typology of inflacial changes, which is worked out from the point of view of methods of stabilization.

A basic postulate of the stabilization of currency is the ceasing of the emission of money. This postulate in practice brings about the removal of the causes of emission. If emission is made for the payment of government expenses, then the problem leads to the balancing of the budget. In the case of bringing about hyperinflation, emission ceases to be profitable, but the problem of balancing the budget even then remains the most important factor in the problem of stabilization, which becomes only technically more complicated.

On the basis of the above theoretical assumptions, the author classifies and analyzes the Polish literature on money. In order to explain a number of special questions in the points of view of some economists, the author presents in brief the course of inflation and stabilization in Poland.

Literature about money, devoted to the stabilization of currency, the author divides in the light of these criteria into three basic movements: 1. The adherents of inflation, 2. The adherents of stabilization brought about by the removal of the causes of inflation, and 3. The adherents of stabilization with the help of technical-currency means. Reports and recommendations of foreign financial advisors were discussed separately (E. Hilton Young, E. W. Kemmerer, Ch. Dewey) as well as certain synthetic studies, possessing an historical-descriptive character.

The first movement, inflational, was represented in Poland only by a relatively small group of economic publicists. This group was unable to produce any more important study, which would embrace more widely and more deeply the inflacial

program. The inflational points of view the author divides into two groups; in the first he includes those writers, whose tendency to a considerable increase in money circulation arose in complete ignorance of the connections which the quantitative theory indicates; in the second group he includes those who were definitely opposed to the quantitative theory. The inflationists of the first group usually came forward pointblank with an inflation program (often with a program of inflation for productive purposes). Publicists, whom the author includes in the second group of inflationists based their arguments generally on conceptions of the safeguarding of emission by national wealth (currency covered by mortgages).

The author criticizes especially the inflation programs and points out a number of misunderstandings, (e. g. the problem of the economic functions of the covering of currency, the results of inflation for purposes of production, the impossibilities of the "creation" of capitals by way of emission, etc.).

The second movement was represented by the greatest number of economists, as well as by important centers of economic thought (Economic Society in Krakow and the Institute of Social Economy in Warsaw). The economists of this group based their arguments on the presuppositions of the quantitative theory of money. In general their method of reasoning may be presented in the following way: The only way to stabilize the currency is to attempt to maintain a certain relatively constant relation of the quantity of money to the volume of production; the most certain method of maintaining the constancy of this relation is the system of the gold standard; the only way to return to stabilized money is to cease emission and to return to the gold standard. Emission is conducted for the needs of the National Treasury, whose budget is not balanced; therefore in the end it is necessary to balance the budget, which would make possible the ceasing of emission, the stabilization of the currency, and the return to the gold standard.

The above theses were agreed upon in general by economists of this group. Differences in programs and controversies between individual economists were the result of differences

in the estimation of the economic situation of Poland and in the differences in their social and political views. The recommendations of foreign financial advisors to the government were in almost complete agreement with the programs of the economists tending to the removal of the causes of inflation.

The third group of writers consisted of the adherents of stabilization with the help of technical currency means. The economists of this group very often referred to the balance of payments setting aside the quantitative theory of money as of less importance. The chief cause of changes in the value of money was the balance of payments. The author proves that these economists did not realize to the full the consequences of either theory, did not understand that the balance theory is implied in the quantitative theory, while the influence of the balance of payments on the rate of currency is formed in the frames outlined by the mechanism of prices. The economists of this movement placed chief stress in their programs on technical currency procedures as e. g. double standard, change of currency, regulation of the rate of exchange of foreign drafts and the like.

On the background of an analysis of political-economic literature the fundamental directions of the various conceptions of the theory of money are plainly visible. Of course, they are even more distinctly stressed in theoretic literature, to which is devoted the second study. In the second study the works of the adherents and adversaries of the quantitative theory are discussed.

The most eminent representative of the quantitative theory in Polish economic literature is Prof. Adam Krzyżanowski, who already in the year 1911 published an extensive monograph entitled „Money“. This study in a certain measure forms a systematic development of the quantitative theory. Prof. Krzyżanowski occupies a position approaching the famous formulations of I. Fisher.

Prof. Tadeusz Brzeski follows the conceptions and formulations of Ludwik Mises. Prof. Brzeski as a matter of fact connects the quantitative theory with the theory of marginal utility. He makes a separate study of the demand and supply of money. Prof. Brzeski criticizes generalities resulting from

the use of the equation of exchange, attempting to create such a system which would take into consideration the situation and estimations of individual economic subjects.

The author of this study makes a comparison of the points of view of Prof. Krzyżanowski and Prof. Brzeski.

The position of Prof. Edward Taylor was discussed separately. Prof. Taylor states, that reality does not entirely confirm the quantitative theory, wherefore it is necessary to supplement it by certain exterior factors not comprehended by it, as for instance psychological elements, payment usage and the like. The author points out that these supplementary factors are included in the quantitative theory and a consideration of them does not explain the basic difficulties found in the quantitative theory.

Among the opposers of the quantitative theory the most important is Prof. Jan Stanisław Lewiński. In reality, however, he is in opposition with the former classical formulations of that theory (in particular he criticizes the views of J. S. Mill and I. Fisher). He points out how intricate is the problem of the connection between the quantity of money and the price level. He makes an attempt to find out under what conditions the equation of exchange may be fulfilled. Much effort Prof. Lewiński devotes to the proving of the supposition that the course of the real processes of economic life does not confirm the quantitative theory. Prof. Lewiński's chief merit is that he has pointed out a number of important difficulties and gaps which are to be found in the quantitative theory in its formulations up till now. He states that as long as the relation between the circulation of money and prices can be and is defined in different ways by different economists, then the quantitative theory, as a positive scientific theory does not exist.

The author points out that in a certain measure the views of Prof. Lewiński are continued in the studies of Tadeusz Adameczewski and Wacław Fabierkiewicz, whose position is eminently eclectic.

M. Kalecki and L. Landau, *Szacunek dochodu społecznego w r. 1929*, (*Assessment of the Social Income for the Year 1929*).

L. Landau, *Dochody z pracy najemnej w r. 1929. (Incomes from Hired Labour in the Year 1929). Institute for the Investigation of Business Cycles and Prices (Investigation of Social Income in Poland, Vols. 1 and 2), Warsaw 1934.*

The following summary will omit details of statistical methods used by the authors, and will be limited to the discussion of the following subjects: the conception of income and the methods which might be adopted in conditions other than Polish.

In the course of the processes of production there are created commodities and services which either serve to further production, or are consumed by the population, or, finally, are unused in the later processes of production and not consumed. The first category is treated as a transitional step in the creation of income; income is understood here as the sum of values of commodities and services in the two remaining categories, consumed (income consumed) as well as those which were not utilized (income accumulated). Accumulated income is composed of: 1) Investments, — the production of capital (all kinds of apparatus for production, means of communication, buildings and installation); 2) growth of the nation's supplies, — raw materials, unfinished manufactured products, and finished products in the hands of the producers and on the market, and finally; 3) export of commodities and services (export of wares, communication services abroad and the like); export should be understood as the surplus of commodities and services exported over those imported, if there is a surplus imported it means that the investments were made or supplies increased at the cost of production received from abroad, the value of accumulation in this case should be diminished in relation to the volume of the surplus of import.

Accumulation is defined as gross accumulation and in general corrected because of the necessity of renewing capital; for calculating accumulation one should take into consideration not the whole of the investments, but only their surplus over and above the amount necessary for the amortization of existing apparatus. This is analogous with the conception of individual income, for the definition of which the amortization

quotas are subtracted. The analogies, however, between social income and individual incomes cannot be applied without certain restrictions; a consequential adoption of the principle of subtraction of the amortization quota would lead to further and further limitation or even complete nihilization of the conception of social income; it is possible to treat the whole of consumption as a renewal of the productive ability of persons employed in production.

The adoption of the conception of amortization in practice meets with even greater difficulties; the estimation of the value of amortized capital as well as the definition of the amortization rate is very difficult and depends to a great extent upon the opinion of the assessor. The assessment of this sum therefore has been given up and accumulation accepted without any subtractions, getting as a final result of assessment a sum which might be termed gross social income.

The conception of production includes both commodities and services; doubts and differences in procedure occur when we try to limit the conception of production in another direction, — that is, when we limit it to commodities and services produced for market. It is obvious that the assessment of social income loses all true meaning when such elements are included, as for instance, the value of women's domestic work; the evaluation of income occurs in market processes and only income passing through the market is objectively estimated income. There exist, however, varieties of productive activity, which in part or in some cases serve to create products passing through market, or in other cases, on the other hand, create products which remain in the possession of the producer; for such type of production exceptions are made in the principle of limiting oneself to income passing through market. In a great measure this refers to agricultural production. Agricultural production and especially that concerned with food, in part goes to market, and in part is consumed by its own management; in view of the fact of the enormous role of food in the whole of consumption, the subtraction of this last part of production in the assessing of the incomes of the agricultural population would make comparisons of the incomes: (1) of this group with other groups of the population, (2) of the population

of countries with a different participation of the population in agriculture — incapable of giving any conception of the relation of the standard of living or of the differences in the degree of prosperity. Therefore it was decided in our calculations to take into consideration the incomes consumed by the farmers in their farms, at the same time distinctly distinguishing between division of the income into income passing through market and the portion of natural income accepted above.

A special category of the production of services is the production of public services. Here is a question of services offered by the government administration (also, in a smaller degree, by local administrations) to all its citizens without special payment, in exchange for sums paid by way of taxation. This is a type of income of a quite special nature, for the payment on the cost of the production of government services is compulsory and is in no way connected with making use of these services: persons paying taxes by no means are able to make corresponding use of government services. The compulsory nature of the purchasing of services is characteristic furthermore of still other types of income, for instance, in the case of services produced by compulsory sickness insurance, — but the groups of population who are to make use of these services are in principle defined; on the other hand, the impersonal character of government services brings about the difficulty of defining who receives the income created by public administrative activity, the often applied conception of identifying the paying of taxes with the purchasing of government services is artificial. Therefore it is necessary to treat government services as an income of a special kind, not permitting of division among particular groups of population, — an income of society as a whole. In such a way therefore, it was accepted in our calculation, although only a certain portion of public services was taken into consideration. Namely, as income, production was taken into consideration in its final form, the greater share of government services should be treated rather as the creation of conditions for the production of commodities and services, as "cost of their production". Therefore we limit ourselves in this case only to the consideration of schools as services presenting the most definite analogy to

other services consumed by the population (outside of government investments as an increasing of wealth on equal footing with private investments).

A conception of social income understood in this way is a consistently developed conception of produced income. It does not therefore take into consideration the often applied correction as a result of conditions abroad; the addition of incomes collected abroad and the subtraction of incomes payable abroad. So, for example, are conducted calculations in England (assessments of Al. Bowley and G. Stamp, C. Clark); in these calculations besides commodities produced at home, commodities received in payment of debts abroad are taken into consideration — this of course is of special significance for creditor-countries. On the other hand for debtor-countries our system is more convenient, with its inclusion to income of values also owed abroad.

Besides defining the commodities and services which were included in our conception of social income it was necessary to establish the prices at which those commodities were calculated in our assessment. The oftenest applied principle and easiest to conduct as a whole is the assessing of income at retail prices, that is, at prices payable by the consumer of produced commodities and services; in the range of accumulated income prices paid by the person investing or prices paid to the exporter of goods loco foreign are substituted for retail prices. The attempt was made to introduce this system consistently, in view of which fact, this principle included not only income passing through market but also in our calculation a part of the natural income was taken into consideration, — that is the incomes of farmers, consumed on their farms.

As a method of calculating the social income in Poland, it was not advisable — because of the economic structure of Poland and statistical breaches connected with it — to use either the method of summing up the values of production of particular branches or the method of summing up the incomes of particular persons. Instead, the method seldom used in practice, of assessing social income by calculating its use in consumption and accumulation was applied. This method

also meets with difficulties in the nature of lack of statistic materials. Relatively easier is the assessment of accumulation on the basis of given data concerning the production of investment goods, the movement of stores and turnover abroad; especially difficult is it to acquire data concerning various kinds of consumption.

One thing however, which makes it easier to overcome these difficulties is the possibility of applying representative methods. The application of the representative method in the study of the structure of consumption always gives very good results — when the structure is examined, it suffices to have data of only a certain portion of consumption, in order to estimate the whole.

In the calculation of social income three basic elements were differentiated: income consumed by the non-agricultural population, income consumed by the agricultural population and accumulated income. Here we shall describe only the method of assessing that part of the income consumed by people of the towns, since that portion of the assessment may be interesting because of the further possibilities of its application in the assessment of the social income, and is therefore the most important of the above-named positions.

The assessment of the value of the global consumption in the towns was based on data concerning town consumption of certain important articles, as well as on the budgets of families of day labourers and office workers. In order to get an idea of the way this method of assessment works, it would be worth while to take a look first at its application in a hypothetical simplified case.

If in labourers' and office-workers' budgets with a widely differing scale of wealth, representing an entirely different mode of living, the share of the value of consumption of a certain given article oscillates in very narrow limits, one may reasonably suppose that also in the value of the global consumption of the population of the towns the share of that article deviates very little from the average of the share of x in the various budgets. Dividing the value of the general town consumption of this article by this average, one receives the value of the global consumption in towns. With the help of formulas it is

possible to express this course of thought in the following manner. Since x in the individual budgets varies in only a very small degree, there exists therefore the approximate relation:

$$ax = 1$$

where a is the reciprocal value of the average x . One may suppose that this relation will be fulfilled approximately likewise for the share of the value of town consumption of a given article xg in the value of the general town consumption which we designate by z :

$$a \frac{xg}{z} = 1$$

whence

$$z = axg$$

Since, however, the value xg of the town consumption of a given article is known, therefore, as a result, the value of the global consumption in towns (z) may be calculated.

Such an article, whose consumption would show a constant share in various kinds of budgets does not in general exist. Let us suppose, on the other hand, that we know the global town consumption x_0 and y_0 of any two articles whose shares in the individual categories of budgets are correspondingly equal:

$$x_1 \ x_2 \ x_3 \ \dots$$

and

$$y_1 \ y_2 \ y_3 \ \dots$$

We may further suppose, that we have been able to find such two constant coefficients a and b , that $ax + by$ for all budgets relatively very little deviates from unity, that is, there exists the approximate relation:

$$ax + by = 1$$

analogous to the equation (1). Then we may suppose that this relation will be fulfilled approximately likewise for the share

of town consumption of given articles equal in the value of the general town consumption $xo : z$ and $yo : z$

$$a \frac{xo}{z} + b \frac{yo}{z} = 1$$

where we derive for z the resolution:

$$z = axo + byo$$

analogous to the equation (2). The question still remains to be considered if and how we may find two such constant coefficients a and b , so that we have $ax + by$ deviating in all budgets relatively little from unity.

In general if, for example, x represents a non-elastic want (bread), and y a more elastic one (meat, clothing etc.) then the share x will decrease together with the magnitude of the budgets under consideration, while at the same time y will increase or it may decrease but more slowly than x . This means, that x and y remain in a certain more or less loose functional relation with each other, whose expression will be the fulfillment in rough approximation of the equation $ax + by = 1$; the approximation will be only a rough one since above all the functional connection is of a loose character, furthermore the function picturing most exactly this connection need not necessarily be linear.

Now to find the values of a and b , by which the relation $ax + by = 1$ is fulfilled, with as great exactness as possible, we use the method of the smallest squares, that is, we make the condition, that the sum of the squares of deviations of $ax + by$ from unity, that is the expression $\sum (ax + by - 1)^2$ shall be the minimum for the values sought a and b . The measure of precision of the equation $ax + by = 1$ will be the coefficient variant $\sqrt{\frac{\sum (ax + by - 1)^2}{n}}$ where n is the number of the categories of budgets taken into consideration.

Taking for the article x baked goods and flour, and for the article y , meats, fats (with the exception of butter) and fish, and basing their observations on data concerning consumption of these articles in towns, as well as on labourers' and

workers' budgets, according to the above method the authors estimated the consumption in the towns of Poland in the year 1929 to amount to 12.5 milliards of zlotys. Furthermore the rural consumption passing through market was assessed at 2.8 milliard zlotys, the natural rural income at 8.2 milliard zł., government services in the field of education at 0.4 milliards, and finally the gross accumulation (that is, without subtracting the amortization) at 2.1 milliard zlotys. In general then, the social income in Poland for the year 1929 was assessed at 26.0 milliard zlotys.

Besides the assessment of the global sum of income a division of consumption was introduced according to social groups. As far as the division of town consumption is concerned, for the calculation of incomes for hired labour the method was applied of totalling the incomes, established according to statistics provided by social insurance and direct statistics of salaries — they totalled altogether 6.8 milliard zlotys, of which 2.5 milliards were paid to office workers and 4.3 to day labourers. The incomes of the small independent dealers and enterprisers were defined according to their earning margins and to their amount of turn-over reckoned in rough approximation as totalling 3.5 milliards zlotys. In these calculations the incomes of hired labour and small independent dealers were identified with their consumption which for Poland may be accepted as an approximately correct assumption. The consumption of the big enterprisers and capitalists was obtained by subtracting the above-named quota from the whole of the town consumption: $12.5 - 6.8 - 3.5 = 2.2$ milliard zlotys. The average consumption per capita of this group, which we obtain in this way, about 4 thousand zlotys a year, is an entirely probable figure, taking into consideration the average standard of living of this strata of society for the year 1929. The likelihood of this result supplies a certain control in the whole of our calculations.

The rural consumption was divided into consumption of the small farmers and farm workers, and of the large landholders; roughly assessing the latter at 0.7 milliard zlotys, we received for the first 10.3 milliards.

Dr Jan K. Wiśniewski, Docent at the Business School in Warsaw, *Rozkład dochodu według wysokości w r. 1929, Warszawa 1934. (The distribution of personal income in Poland 1929).*

At the outset of the work the author defines the statistical population, the statistical unit and the variable we are dealing with. The population is composed of all income recipients on the given territory and at the given time, or, in other words, of all persons occupied as shown by census enumeration. The statistical unit is one income recipient or one income. Of course, incomes belonging to one person while derived from various sources should be added and treated as one unit. Corporations and other similar bodies are not taken into account.

The variable investigated is the amount of personal income, understood as the total of net income expressed in terms of money and the money value of goods and services, consumed by the given individual and derived from his own productive undertaking or other property. This definition is in accordance with Macaulay's.

As to the particular statistical methods adopted by the, author extensive use of the logarithmic frequency curve should be mentioned. The investigations of Gibrat, van der Wijk and others showed that this curve gives very good fits when applied to income distributions. The experience of the author confirmed their results, at least with respect to the „upper tails“ and to homogeneous distributions.

By the logarithmic curve the author means the one representing the following function:

$$y = \frac{1}{\alpha \sqrt{2\pi} (x - x_0)} e^{-\frac{1}{2\alpha^2} \lg \frac{x - x_0}{g}}$$

Various fitting methods have been used, mostly graphic ones.

For the purpose of the present inquiry the author divides all incomes into two wide groups; wages and salaries, and all other incomes. Old age pensions and the like are included with wages.

Wages and Salaries: sources of statistical data pertaining to the distribution of wages and salaries are fairly numerous. In the first place should be mentioned the income-tax returns, fur-

ther statistics of wages and social insurance. Income-tax data may be considered as trustworthy, because the tax is levied at the very moment when the wage or salary is paid to the worker or employee. On the other hand, we have only scarce material concerning the distribution of earnings of wage-earners in commerce and handicraft, domestic servants and farm laborers.

The frequency distribution of assessed incomes cannot be successfully fitted with one logarithmic curve, as there is a definite „jump“, in a certain place about 10,000 zł.¹, and we doubt whether any other analytical curve would yield substantially better results. Nevertheless we can fit very well two segments of logarithmic curves, with different parameters, of course, to the lower and upper part of the distribution. The author applies extrapolation to the lower in order to get an estimate of the distribution of earnings below the taxation limit, 2,500 zł. A small correction is needed for the purpose of bringing the lower limit of incomes down to zero, according to evidence other than income-tax data. The total sum of wages and salaries, computed from the distribution thus obtained, checks well with the estimates of Kalecki and Landau.

The further inquiry covers: (1) component parts of the extended income-tax distribution, viz., industrial workers and clerical workers other than state employees. This division is incomplete, leaving aside, as it does, manual workers employed in commerce and handicraft and domestic servants; (2) those groups that do not enter into the former distribution either for technical reasons (state employees) or, having earnings below the taxation limit (farm laborers), cannot be considered as a part of the aforesaid fairly homogeneous distribution.

For industrial workers the author makes use of an estimate formed by Landau. As there are no direct data as to the 1929 distribution of earnings, Mr. Landau had to base his estimate on 1932 data pulled backwards by means of indices of wages. This series can be excellently fitted with a logarithmic curve. Owing to this circumstance we can extrapolate with a comparatively small margin of error.

¹ One zloty = \$ 0.112 (1929 parity).

In dealing with clerical workers, we have detailed data from compulsory old-age and unemployment insurance. Nevertheless, the raw series needs some corrections, since all wages are not counted, and some state employees are included.

The distribution of the salaries of state employees, including those employed at the state Railways, of Army officers and teachers, is estimated from the State Budget.

As to farm laborers, we are compelled to make rather loose estimates. Some quantitative data are available only for those employed on farms over 50 hectares of area. As to the others, we make the assumption that the distribution of their incomes is similar in shape to the former, while shifted to the left, the mean earnings being substantially lower. Also we allow for a possible income from small pieces of land owned by some laborers.

TABLE 1.
Selected Groups of Wage Earners

Clerical workers *		Industrial workers		Farm laborers	
lower class limit of earnings zl. thou. per year	frequencies (thousands)	lower class limit of earnings zl. per week	frequencies (thousands)	lower class limit of earnings zl. per year	frequencies (thousands)
0	15.5	0	62	250	425
1.0	14.3	10	177	500	582
1.5	24.1	20	209	750	193
2.0	31.3	30	199	1000	161
2.5	90.8	40	148	1250	129
3.2	67.3	50	107	1500	76
4.0	82.6	60	70	2000	4.4
5.2	52.3	70	50	Total	1600
6.4	35.2	80	78		
8	44.9	Total	1100		
13	12.75				
19	4.52				
32	1.18				
52	0.36				
88	0.15				
Total	477.3				

* Including clerical workers among the state employees.

Other Incomes: the only sources of data which indicate the distribution of incomes other than wages and salaries is that

furnished by income-tax statistics. The latter are intended to cover all incomes of zł. 1500 or more per year. Aside from the ever-present understatements it seems that the Polish income-tax is not an even burden to different classes of tax-payers. Especially the small farmers benefit from alleviations that are not open to others. Also tax-payers with large families do not pay taxes from total incomes; some of them, indeed, are entirely free from the tax. These circumstances tend to create a certain heterogeneity in the basic material, therefore the way of extending down to zero the distribution of assessed incomes is dangerous. The non-farmers form a more homogeneous population, so we may apply purely mathematical reasoning with a smaller risk. While we miss a complete frequency distribution of non-farmers incomes, we have three empirical data; (1) the number of tax-paying non-farmers expressed as a percentage of their total number; (2) the sum of their incomes; (3) the sum of taxes paid. To this point we shall note that the Polish income tax, for non-wage incomes, is progressive and might be represented by the following formula

$$p = 0.018 x^{3/2}$$

p being the tax, x being the income. Because the total frequency distribution of incomes assessed is well fitted by the logarithmic curve¹ and the existing irregularities are attributable to the farmers incomes, we may infer that non-farmers incomes can be approximated by means of a logarithmic curve. Having three empirical data, we can easily find three parameters of the logarithmic curve². Checking the resulting distribution with the estimates arrived at by Kalecki and Landau, we are induced to leave its shape unchanged but to increase substantially the mean income, thus making up for understatements. The ratio of estimated true income to that assessed is about 2 : 1.

Any analogous operation for the group of farmers' incomes proved to be impossible, the characteristics of the said group being inconsistent as far as a logarithmic frequency

¹ The Pareto curve registers in this case a complete failure.

² Cfr. Davies, Yuan.

curve is concerned. Therefore, we attempted to make an estimate on a quite different basis. We know the distribution of farms according to their area, as well as the approximate regression equation of income on farm area. The estimate of the distribution of farmers' incomes obtained by this method gives quite plausible results.

Summary of Results

The distribution which the author obtains by adding frequencies in the separate class intervals is fairly regular above, say

TABLE 2.
Distribution of Incomes in Poland*

Lower class limit of incomes zł thou. per year	F r e q u e n c i e s				Income sums		
	Wage earners	O t h e r s		A l l i n c o m e s	t h o u s a n d s	per cent.	zł milln.
		non- farmers	farmers				
							per cent.
0	0	—	—	0	0.00	0	0.00
0.25	515	—	—	515	6.03	195	0.91
0.50	787	45	0	832	9.74	520	2.43
0.75	464	118	9	591	6.91	515	2.41
1.00	443	102	148	693	8.11	780	3.65
1.25	372	85	429	886	10.37	1220	5.71
1.5	450	130	1210	1790	20.94	3090	14.45
2	526	166	977	1669	19.53	4080	19.08
3	486	170	310	966	11.30	3730	17.45
5	214	154	47	415	4.86	2830	13.24
10	33.5	80.3	10.3	124.1	1.45	1705	7.97
20	4.92	39.35	7.82	52.09	0.611	1530	7.16
50	0.45	7.73	1.48	9.66	0.113	650	3.04
100	0.10	2.42	0.58	3.10	0.036	535	2.50
Total . .	4296	1100	3150	8546	100.000	21380	100.00
Sum of in- come zł milln. . .	8111	6000	7270	21381	—	—	—
Mean in- come zł .	1888	5455	2133	2502	—	—	—
Median in- come zł .	1215	2536	1910	1690	—	—	—
Modal . .	611	836	1700	1590	—	—	—

* Notice. The figures in the above table are, in general, given with greater accuracy than original data afford, with the purpose of avoiding additional errors, resulting from rounding off. The modal incomes are either calculated from frequency curves, interpolated or estimated.

750 zł. A secondary modal value exists, however, in the interval of 500 to 750 zł., where most farm laborers are included. They are, in fact, the class of population enjoying the lowest incomes.

The modal value proper is to be estimated at 1590 zł., the median at 1690 zł., the arithmetic mean at 2500 zł. All those averages relate, let us recall, to the expressed in money units, the income of one recipient, irrespective of the size of

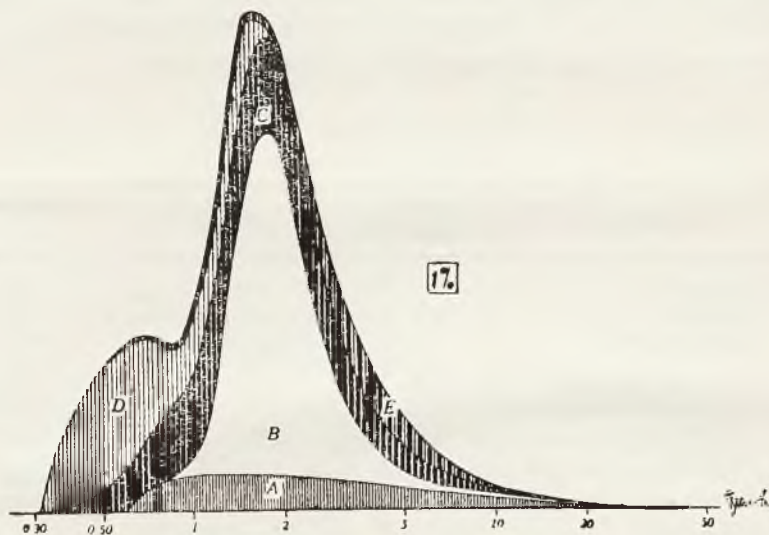


Chart 1. Frequency curves. The horizontal scale is logarithmic, the figures shown being incomes expressed in zł. thousands per year. The area of the little square corresponds to one per cent. of the total population. Non-wage earners: *A* — non-farmers, *B* — farmers. Wage earners: *C* — incomes assessed (extrapolated downwards), *D* — farm laborers, *E* — state employees.

his family (if any) and of the purchasing power of money at the time and place where the income is spent. The none too large difference between the modal and median income is attributable to the great „density“ of incomes in the neighbourhood of 1500 zł., mostly of small independent farmers, who form the most numerous population class.

As to the interesting problem of the inequality of income distributions, considerable insight is gained. The group showing the greatest inequality are non-farmers other than wage earners.

The inequality measure we adopted as standard, *viz.*, Gini's η^1 gives for this group 0.60. This high value is in part, at least, attributable to the social composition of this group, which includes petty traders and craftsmen together with modern capitalistic entrepreneurs. Yet the transitions are gradual. The farmers, on the other hand, proved to be a group of comparatively slight dispersion and income concentration. η equals only 0.25. The share of small farmers in the total is preponderant. Moreover it should be noted that the farmer's income increases less than in proportion to the farm area.

TABLE 3.
Inequality of incomes

Series	Value of η^*	Series	Value of η
Poland 1929		Austria 1911 (Savorgnan)	0.47
All incomes	0.48	Norway 1906 (Bortkiewicz)	0.46
Wage earners		Gr. Britain 1903 "	0.57
Total	0.48	Prussia 1907 "	0.47
Clerical workers . .	0.36	" 1914 "	0.51
Industrial workers .	0.32	" 1918 "	0.52
Farm laborers . . .	0.27	" 1919 "	0.52
Others		Italy 1929 (Orlandi)	
Non-farmers	0.60	Business	0.52
Farmers	0.25	Professions	0.49

* computed graphically

Among the wage-earning population the greatest inequality is found among the clerical workers (counted for this purpose together with the clerical part of state employees), then come industrial workers, and lastly the farm laborers. Again the rural population gives the least dispersed group. All wage earners² show a degree of inequality about half way between farmers and others and approximate the general average. The latter ($\eta = 0.48$) is rather high for a country like Poland, not belonging to the typically capitalistic states. Table 3 shows that pre-war Prussia had a degree of inequality not

¹ Relative mean difference. Cfr. Yntema.

² Together with the salaried class, of course.

materially higher than that of 1929 Poland. Perhaps this unexpected position of Poland might be attributed to its transitional state. Side by side with highly developed capitalistic enterprises, their owners and employees, are living millions of peasant population, largely consuming the produce of their own soil or, as with farm laborers, having their wages paid not in money but in natural products. The incomes of this part of the population are extremely low, even in comparison with the

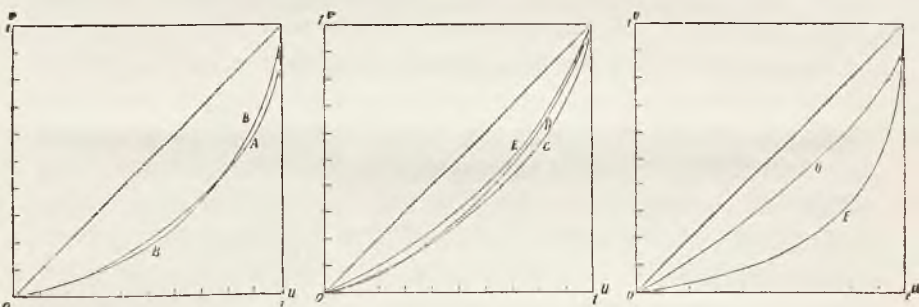


Chart 2. Lorenz curves. u is the ratio of the number of individuals having a given income or less to the total number of income recipients, v the ratio of their incomes to the total of all incomes. n is the ratio of the area between the diagonal and the curve to half the area of the square. A — all incomes, B — all wage earners, C — clerical workers, D — industrial workers, E — farm laborers. Non wage earners: F — non-farmers, G — farmers.

urban wage-earners. This tends to create a more pronounced inequality of incomes.

The entire frequency distribution of incomes presents a rather heterogeneous population and the hope is slight to find a none too complicated frequency curve which would give a passable fit. A comparison with results obtained by other writers is extremely difficult, as they mostly base their investigations on taxation data only, *i. e.*, on the upper tail of the income curve. This applies especially to inequality measures; when computed from income-tax statistics only, they give incomparably lower values.

Dr Jerzy Schimmel, *Miejska renta gruntowa. Poznań 1933. (Urban Ground rent) pp. 170.*

The author represents the view that urban ground rent is as to its nature a differential rent arising on the basis of different utilities of building lots for the utilisers of these lots.

The chief, though not the only, moment influencing the degree of the utility of the lot is its situation within a given town area. Analysing the daily pendulous movement of the town population, the author states the existence of many centres of the movement of the population. The nearer such a centre the given lot is situated, the larger such an internal centre of the town is, the greater is the utility which the lot possesses for its inhabitants and the greater the dispersion between the utility of the marginal lots. The above mentioned dispersions arise chiefly on the basis of losses of time and costs of transportation incurred by the utilisers of lots situated at a greater distance from the centre, or centres of the pendulous movement of the town population.

The phenomena of transportation, however, are not, according to the author, the only factors shaping the utility of the lot. At the same time, of significance here are also moments of a hygienic nature, and frequently various prejudices and habitudes. All these moments, crossing, cumulating, or compensating each other, bend in this or that direction the fundamental factor of the utility of the lot, i. e. the cost of transportation within the town area.

Having accepted this point of view, the author rejects the theory of monopoly and the theory of speculation by means of which some urbanists and economists explain the high prices of building lots, or the high rent paid for these lots when they are built on. The price of unbuilt lots is the capitalized expected rent from the given lot according to the market rate for capital investments. There can be no question of a monopoly where the land surrounding the towns is owned by a great number of persons. In those rare cases when the lands surrounding the town are the property of one or several owners, there could exist the danger of screwing up the prices of land, but not above Cournot's point, which in this case will not be very

much higher than the free market point because for the inhabitants of towns, in many cases there exists the possibility of substituting surface by erecting higher buildings or by settling in other towns.

In the author's opinion, the economic laws, by which the ground rent is governed in towns, are in their nature identical with the laws established by Ricardo for agricultural rent. Therefore the author rejects the opinions, different from his own, of Sismondi and J. S. Mill (adherents of the theory of monopoly), of Eberstadt ("barracks" rent), of Pantaleoni and Fr. Wieser.

The author constructs an isolated town and analyses the formation of the rent for particular lots with the growing of the town. He, moreover, investigates the effect of decentralization of the town on the height and distribution of the rent as well as the effect of high and low building on the level of the rent.

In the three last chapters the author analyses legal and fiscal postulates which, according to many authors, could play an effective role in the struggle against the too great increase of municipal ground rent. He discusses the building law which in his opinion does not lessen the rent but shifts it to other hands. The author proves this thesis in detail by means of the example of the English "lease". Then he analyses the influence of the tax from unbuilt lots on the rent, reaching the conclusion that this tax undergoes capitalization, then on the sale of the lot, shifting back to the seller. In this way the tax in the course of years undergoes amortization without calling forth the required effect. As to the tax from an increase of value, the author draws attention to the considerable difficulties of its assessment especially in a period of great changes in the value of money and of great instability of economic conditions.

Finally the author discusses the means tending successfully to lower the rent. They are: deconcentration in building over the town, avoiding an excessive growth of the town in surface by admitting high buildings and in addition, all kinds of facilities in transportation in the broadest sense of the word.

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